
COMMONWEALTH of VIRGINIA

Virginia Nonpoint Source Pollution Management Program Plan

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EXECUTIVE SUMMARY

Nonpoint Source Pollution Management Program

Virginia's Nonpoint Source Pollution Management Program is comprised a diverse network of state and local government programs. These programs are described in this Nonpoint Source Pollution Management Program Plan (Nonpoint Source Plan). This plan describes the elements of this networked program and it identifies short and long term program goals. It also serves as an update of the nonpoint source elements of the Chesapeake Bay and Virginia Waters Clean-Up Plan developed pursuant to the [Chesapeake Bay and Virginia Waters Clean-up and Oversight Act](#).

Coordination and cooperation are vital to effective nonpoint source pollution management. Virginia has sought to strengthen coordination and cooperation by aligning Nonpoint Source Management Plan development with the Chesapeake Bay milestone planning process. This approach establishes an ongoing planning framework that ensures program updates and fosters synergy.

In addition to enhanced coordination with Chesapeake Bay planning activities, Nonpoint Source Plan development has afforded an opportunity to ensure close coordination with state water supply planning and effective integration of implementation efforts to restore and protect the aquatic resources. One significant output from this coordination is development of a watershed prioritization framework. This prioritization framework will help guide development of watershed priorities that meets water quality goals of both the Nonpoint Source Plan and the Clean Water Act, 303(d) visioning framework.

Other important elements of this plan include development of longer term goals that cover a five year planning horizon as well as more specific and programmatic milestones that align with the Chesapeake Bay biennial planning framework. The following are selected highlights of goals and milestones include in this plan:

- Conduct annual agricultural implementation needs assessments.
- Enhanced funding for livestock exclusion and fund exclusion practices at 100% with state funds.
- Increase the number of nutrient management (NM) plans on unpermitted dairies. 75% of facilities will have a NM plan by 12/31/2015.
- Respond to all water quality complaints in a timely fashion.
- Achieve widespread implementation of the Resource Management Program (RMP) by agricultural producers. Develop RMPs on at least 40 agricultural operations annually by 12/31/2015.
- Achieve 90% implementation of BMPs for forestry operations by 2015.
- By December 31, 2014 develop priorities and goals for Land Conservation in Virginia to be accomplished by 12/31/2017
- Document and report reclamation of active and orphaned and abandoned mine sites. Goal of 1,000 acres of mine reclamation by 12/31/2015.
- Enhance tracking and reporting of alternative onsite sewage system pollution reduction.
- Achieve reductions from new development and redevelopment using urban BMPs through ramped up compliance with the Virginia Stormwater Management permit (VSMP) and the stormwater provisions of the Chesapeake Bay Preservation Act (CBPA).
- Develop a watershed prioritization system that will guide the location and timing of the TMDL development, the use of alternative restoration or protection approaches, and the allocation of resources.
- Develop annual prioritization list of TMDLS.

- Enhance DEQ's Comprehensive Environmental Data System (CEDS) to include Implementation Plan Spatial Data.
- Continue utilization of DEQ's Citizen Water Quality Monitoring Program as a mechanism to document water quality improvements associated with DEQ's NPS TMDL Implementation Program.
- Develop a communications strategy for engaging local stakeholders in WIP implementation, milestone planning and progress reporting.
- Conduct compliance reviews of local Chesapeake Bay Act programs once for each locality by 2019

These goals and milestones represent just a few of the many that are set forth in this plan. It also includes updated program descriptions along with information about coordination and partnerships for both regulatory and non regulatory programs.

A. INTRODUCTION

A.1 MISSION

Article XI of the Constitution of Virginia states that it shall be the policy of the Commonwealth to protect, restore and improve the water quality of all bays, lakes, rivers, streams, creeks, and other state waters from pollution and impairment. This statement represents an exceptionally clear and powerful commitment to nonpoint source pollution control and Virginia's outstanding water resources.

A.2 Nonpoint Source Pollution

Many definitions of nonpoint source pollution can be found in technical and general publications. For the purpose of this management program and for the purpose of implementing the nonpoint source provisions in the Clean Water Act, nonpoint source pollution is defined in EPA guidance as follows:

Nonpoint Source Pollution (NPS) pollution is caused by diffuse sources that are not regulated as point sources and normally is associated with agricultural, silvicultural and urban runoff, runoff from construction activities, and other sources. Such pollution results in the human-made or human-induced alteration of the chemical, physical, biological, and radiological integrity of water. In practical terms, nonpoint source pollution does not result from a discharge at a specific, single location (such as a single pipe) but generally results from land runoff, precipitation, atmospheric deposition, or percolation. It must be kept in mind that this definition is necessarily general; legal and regulatory decisions have sometimes resulted in certain sources being assigned to either the point or nonpoint source categories because of considerations other than their manner of discharge.

A.3 Nonpoint Source Pollution Management Program

Pursuant to U. S. Environmental Protection Agency (EPA) guidance issued in May 1996 and subsequently during 1998 and 2012, Virginia has updated its nonpoint source (NPS) pollution management program. This program update was developed by the Virginia Department of Environmental Quality (DEQ) in cooperation with other state, federal, regional and local agencies and organizations in compliance with Section 319 of the Clean Water Act of 1987.

Virginia's Nonpoint Source Pollution Management Program is a diverse network of state and local government programs. Collectively, these programs help prevent water quality degradation and restore the health of lakes, rivers, streams and estuaries by promoting and funding state and local watershed planning efforts, stream and wetland restoration and protection, education and outreach, and other measures to reduce and prevent nonpoint source (NPS) pollution from impacting waters of the Commonwealth. Statewide NPS pollution control programs and services support both individual natural resource stewardship and assist local governments with resource management. These statewide programs are funded through state agency budgets, non-general fund revenues and federal and non-federal grant programs. There are several state and federal laws that result in comprehensive programs that address the management of NPS pollution in the Commonwealth of Virginia. Collectively these state and federal programs and laws make up the legislative backdrop to Virginia's comprehensive NPS Pollution Management Program.

During its 2013 Legislative Session, the Virginia General Assembly passed Chapters 756 (HB2048) and 793 (SB1279) of the 2013 Virginia Acts of Assembly which designated, effective July 1, 2013, the Virginia Department of Environmental Quality (DEQ) as the lead for nonpoint source programs in the Commonwealth of Virginia (§ 10.1-104.1 of the Code of Virginia). DEQ is responsible for distribution of funds, identification and establishment of priorities of NPS related water quality problems, and the administration of an NPS advisory committee.

A.4 Federal Clean Water Act – Section 319 – Nonpoint Source Pollution

Section 319 of the Federal Clean Water Act requires that states develop and implement NPS pollution management programs. In 1999, the EPA approved Virginia's *1999 NPS Pollution Management Program Plan update*. In 2006, state legislation was passed House Bill 1150 directing the Commonwealth to develop a plan to address water quality impairments and protect the waters from further degradation. In 2008, it was decided that the plan established by this new legislation, the *Chesapeake Bay and Virginia Waters Clean-up Plan*, (Cleanup Plan) would serve as the update to the Commonwealth's *NPS Pollution Program Management Plan*. The last update of the *Chesapeake Bay and Virginia Waters Clean-Up Plan* was in 2009. In November 2012, EPA issued new *guidance* regarding the updating of state Nonpoint Source Management Programs. This new guidance requires all states to have updated management plans by September 30, 2014. When approved, the *2014 Virginia NPS Pollution Management Plan* will update and replace previous NPS management plans.

A.4.1 - Section 319 Program Guidance: Key Components of an Effective State Nonpoint Source Management Program

1. The state program contains explicit short- and long-term goals, objectives and strategies to restore and protect surface water and ground water, as appropriate.
2. The state strengthens its working partnerships and linkages to appropriate state, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.
3. The state uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.
4. The state program describes how resources will be allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts.
5. The state program identifies waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for protection. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments, developing watershed-based plans and implementing the plans.
6. The state implements all program components required by section 319(b) of the Clean Water Act, and establishes strategic approaches and adaptive management to achieve and maintain water quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, non regulatory, financial and technical assistance, as needed. In addition, the state incorporates existing baseline requirements established by other applicable federal or state laws to the extent that they are relevant.

7. The state manages and implements its NPS management program efficiently and effectively, including necessary financial management.
8. The state reviews and evaluates its NPS management program using environmental and functional measures of success, and revises its NPS management program at least every five years.

A.5 State Laws

A.5.1 - Chesapeake Bay and Virginia Waters Clean-Up and Oversight Act of 2006

The Chesapeake Bay and Virginia Waters Clean-up and Oversight Act ([HB1150](#)) was passed during the 2006 legislative session of the Virginia General Assembly and signed into law on April 3, 2006 (Title 62.1, Chapter 3.7, § 62.1-44.117-62.1-44.118 of the Code of Virginia). The Act established the requirement to develop a plan for the cleanup of the Chesapeake Bay and Virginia's waters designated as impaired by EPA. Subsequently the plan also addresses the protection of water resources not yet impaired by pollution. The resulting *Chesapeake Bay and Virginia Waters Cleanup Plan* provides clear objectives, well-developed strategies, predictable time frames, realistic funding needs, common-sense mitigation strategies, and straightforward recommendations to the General Assembly for its consideration for stream restoration and protection. The initial plan was presented to the General Assembly in 2007. The plan was last updated in June 2009.

A.5.2 - Water Quality Monitoring, Information and Restoration Act of 1997

In 1997, the Virginia General Assembly enacted the [Water Quality Monitoring, Information, and Restoration Act \(WQMIRA\)](#), -62.1-44.19:4 through 19:8 of the Code of Virginia. This statute directs the Department of Environmental Quality (DEQ) to develop a list of impaired waters, a Total Maximum Daily Load (TMDL) for each impairment, and implementation plans for these TMDLs. WQMIRA directs the DEQ “develop and implement a plan to achieve fully supporting status for impaired waters.”

A.5.3 - The Virginia Water Quality Improvement Act of 1997

The [Virginia Water Quality Improvement Act \(WQIA\)](#) was passed during the 1997 legislative session of the Virginia GA and signed into law on March 20, 1997. This Act establishes a comprehensive statewide program to address point and non-point sources of water pollution. It creates the Virginia Water Quality Improvement Fund (WQIF) to provide assistance for water quality improvements to a broad array of entities, including local governments, soil and water conservation districts, and landowners. The fund is a principle source of state cost-share money for agricultural practices and to implement nutrient and sediment reduction targets established as part of the *Chesapeake Bay Watershed Implementation Plan*. The fund also provides grants for practices to control NPS pollution in watersheds in Virginia that drain to waters other than the Chesapeake Bay. The WQIA also directs state agencies to provide technical and financial assistance to local governments, soil and water conservation districts, and individuals. Moreover, the WQIA includes water quality assessment and state and local cooperation provisions. DEQ is charged in assisting in the development of local cooperative NPS pollution programs and programs to implement Virginia’s nonpoint

source pollution management program, in accordance with the WQIA, § 10.1-2124.B of the *Code of Virginia*. The purpose of the cooperative nonpoint source pollution program is to maintain and/or restore water quality standards in stream segments where NPS pollution is a significant loading factor. NPS pollution programs require locally based remedies that address the unique, site-specific, and varied causes of NPS contaminants. Cooperative NPS pollution programs are combinations of programmatic tools, and technical and financial resources of varying emphasis used to target water quality impairments in a given watershed and political jurisdiction. A cooperative approach to protecting water quality helps local stakeholders develop their capabilities individually and collectively to address local water quality impairments. In 2009 the Virginia General Assembly created the Virginia Natural Resources Commitment Fund (VNRFCF) which is a sub-fund of WQIF specifically set-aside for agricultural cost-share program and practices.

B. Nonpoint Source Programs

B.1. AGRICULTURAL AND FORESTAL PROGRAMS

B.1.1 Agricultural Cost Share Program

Program Description

The Virginia Agricultural Best Management Practices Cost-share Program (VACS) is administered by the Virginia Department of Conservation and Recreation (DCR) through local Soil and Water Conservation Districts (District or SWCD). The program's goal is to improve water quality in the state's streams, rivers, and the Chesapeake Bay. The program offers cost share assistance as an incentive to carry out construction or implementation of selected Best Management Practices (BMPs). The basis of the program is to encourage the voluntary installation of agricultural BMPs to meet Virginia's non-point source pollution reduction water quality objectives. Although resource based problems affecting water quality occur on all land uses, this program promotes efforts for corrective action on agricultural lands only.

The program provides cost-share and technical assistance to landowners and agricultural operators that voluntarily install selected BMPs. Historically the program originated to provide opportunities for demonstration and education of site-specific agricultural best management practices designed to reduce agricultural non-point source contaminants. With the acceptance of the Watershed Implementation Plan (WIP) that is designed to remove the Chesapeake Bay from the impaired waters list, Virginia has sharpened its focus on maximum implementation of agricultural BMPs that provide the greatest reduction of nutrients and sediments from state waters. Program objectives include special emphasis on the reduction of nutrients (nitrogen and phosphorus), and sediment delivered to the Chesapeake Bay; by preventing additional pollution from entering state waters; and meeting the criteria for Virginia's compliance with Section 319 of the Clean Water Act.

Goals, Objectives, and Strategies

Goal: Widespread adoption of cost-effective agricultural best management practices

Objective: Implement to the maximum extent practicable, the five priority agricultural best management practices in the Chesapeake Bay watershed in order to significantly advance the Commonwealth's nutrient and sediment pollution reduction goals.

Strategies:

- Through expanded outreach and cost share support, focus on the following “Priority Practices (where applicable):”
 - Nutrient management plan preparation and implementation
 - Conservation tillage
 - Cover crops
 - Riparian buffers (including those established under the Conservation Reserve Enhancement Program (CREP))
 - Livestock exclusion
- The General Assembly may wish to review the statutorily required 60%/40% split of WQIF funds between the Bay and Southern Rivers watersheds to determine if sufficient nonpoint source funds are made available each year to meet the Chesapeake Bay goals established under the regional multi-state compact
- Provide funding to Virginia's 47 Soil and Water Conservation Districts (SWCD or district) for additional on-the-ground technical staff to deliver the increased agricultural cost-share program; the level of funding needed is dependent on the amount appropriated to the WQIF and the Natural Resources Commitment Fund for implementing the non-point source BMPs .
- With sufficient funding, DCR will provide the necessary technical training, financial management assistance and administrative support necessary to assist the 47 SWCDs in managing larger financial obligations, new staff and reporting and auditing responsibilities.
- With sufficient funding, DCR will be able to provide local soil and water districts with specific engineering training and certification for the delivery of priority BMPs that require such expertise.
- Continue to work collaboratively with the Natural Resources Conservation Service (NRCS), SWCDs and others to provide training for new technical staff
- DCR is developing its' own BMP engineering design and review capacity.
- DCR, in consultation with Soil and Water Conservation Districts and agricultural producers, have explored ways to boost levels of farmer participation in agricultural cost-share programs through additional voluntary, financial incentives, certifications and recognition programs as well as other promotional activities including expanding media outreach efforts statewide. Work to implement an MOU with commodity groups for promotion of stream exclusion practices.
- Coordinate conservation efforts with NRCS and FSA programs to assure federal and state conservation programs are not competing for participants and are promoting effective conservation communications to local producers and NGOs
- Explore new and innovative methods of maintaining the conservation benefits of BMPs that have been implemented but the agreed upon maintenance period associated with the original cost share contract is about to expire
- Develop methods for identifying and quantifying voluntarily installed BMPs and methods for keeping them functional
- Determine resource needs for agricultural BMP implementation through SWCDs. Conduct an annual Agricultural needs assessment for General Assembly by November 1 of every year.
- Enhanced funding for livestock exclusion. Fund qualified stream exclusion practices at 100% with State funds.

- Track voluntary BMP collection statewide through development of BMP dataset for input to EPA-CBPO Watershed Model
- Develop agricultural NPS assessment data. Data developed, analyzed and reported to DEQ.

Coordination and Partnerships

- Continue to work cooperatively with both NRCS state office staff and District Conservations (field staff) to coordinate tax credit and cost-share practices and programs so that each agencies BMPs and conservation programs are complementary rather than competitive.
- Continue to utilize existing DCR Conservation District Coordinators (CDC) to effectively communicate nonpoint pollution reduction efforts to SWCDs so that locally lead pollution reduction programs promote reduction of agriculturally originated NPS contaminants in the states streams, rivers and the Chesapeake Bay.
- Maintain continuous contact and communications with VDACS to assure that DCR and SWCDs are aware of Agricultural Stewardship Act complaints and promote the use of the Virginia Agricultural BMP cost-share and Agricultural BMP Tax Credit programs to effectively address any agricultural contaminants needing treatment.
- Assist DEQ in delivery of Virginia's nonpoint source pollution reduction efforts. Assistance will include sharing of BMP implantation data for VACs and Tax Credit BMP implementation so that TMDL Implementation Plans have the most recent practice implementation data.
- Include NGOs in stakeholder program input such that both governmental and NGO objectives are targeted when water quality programs are developed and implemented.

Initiatives and Implementation

- The VACS has long promoted the cost-effective implementation of priority practices where they will maximize the reductions of sediment and nutrients generated on agricultural lands. Virginia has sharpened its focus on maximum implementation of agricultural BMPs that provide the greatest reduction of nutrients and sediments from state waters. Program objectives include special emphasis on the reduction of nutrients (nitrogen and phosphorus), and sediment delivered to the Chesapeake Bay; by preventing additional pollution from entering state waters; and meeting the criteria for Virginia's compliance with Section 319 of the Clean Water Act.
- In addition to widespread implementation of cost-effective priority practices, continue to implement targeted agricultural BMPs within watersheds that have TMDL implementation or watershed based plans.
- Implementation of agricultural BMPs is focused on identified priority practices that will fulfill Virginia's Watershed Improvement Plan commitments and therefore contribute to meeting the Bay TMDL nutrient and sediment reduction goals.
- DCR continues to generate outreach and education materials that promote existing BMP implementation programs

Implementation Priorities

- Primary considerations (PC) identify DCR's statewide water quality considerations for state agricultural cost-share funding. Primary consideration must be used by all Districts to

qualify cost-share application for funding. Any application that does not meet at least one of the priority considerations below would not receive state funded agricultural cost-share.

- Priority consideration must be given first to those candidates in the highest ranked hydrologic unit as determined by the NPS Assessment. Descending priority would be given to those in lower ranked units.
 - Districts should prioritize the implementation of appropriate BMPs that will reduce the greatest amount of nutrient and sediment contamination while utilizing the least amount of cost-share funds to address site-specific water quality problems in identified high priority watersheds with all program cost-share funds.
 - Candidates for cost share or tax credit approval that are located within or upstream of an identified Total Maximum Daily Load (TMDL) stream segment shall be prioritized for funding of practices that reduce the identified pollutant.
 - Applications for cost-share or tax credit approval to implement BMPs that are included in an approved *Virginia Resource Management Plan* will also receive priority consideration
- Secondary considerations (SC) that identify the local District Board's water quality improvement focus will be developed and approved by the District Board. These secondary considerations should be easily understood by any potential participant. Districts focus on describing the Boards' desired local water quality improvements. Secondary considerations should be narrative statements that assist District Boards in ranking cost-share applications based upon which practice implementation will provide the greatest amount of local water quality improvement. The District will be expected to abide by these policies throughout the entire program year so that each application is ranked to receive funding based upon the anticipated water quality benefits. Districts shall clearly and fully record their secondary or local water quality considerations so that the decisions for funding applications made by applying the considerations are easily understood by all potential applicants.
- Recognizing that it is generally far cheaper to conserve and protect healthy ecosystems than to restore them after they have been damaged, agricultural BMPs can serve a key role in the protection of healthy waters and healthy watersheds. The integrity (health) of aquatic ecosystems (streams) is tightly linked to the watersheds of which they are a part. There is a direct relationship between land cover, key watershed processes and the health of streams. Virginia has nearly 200 ecologically healthy streams, creeks and rivers throughout the state, and there are more yet to be identified. Healthy streams in Virginia have been identified and ranked through a stream ecological integrity assessment known as the **Interactive Stream Assessment Resource (INSTAR)**, <http://instar.vcu.edu/> as "exceptionally healthy," "healthy," or "restoration candidate." Districts may choose to prioritize BMP applications from areas with identified healthy waters by specifying healthy waters as a secondary consideration.

Measures of Success

- Measures of success include the delisting of previously impaired stream segments and water quality sampling results that utilize trend analysis to denote long term reductions in monitored agricultural NPS pollutants.

- The Agricultural NPS ranking criteria considers the implementation of Agricultural BMPs as part of each Hydrologic units NPs ranking for nitrogen, phosphorous and sedimentation. BMP implementation is increased associated with increased BMP cost-share funding associated with having high ranked Agricultural NPS hydrologic units. The SWCDs implement large numbers of BMPs to reduce nitrogen, phosphorous and sediment, the potential hydrologic unit ranking decreases and therefore shifts Agricultural BMP cost-share funds to other high ranked hydrologic units. This feedback mechanism moves the cost-share funds around the agricultural lands within the state.

B.1.2 Agricultural Nutrient Management

Program Description

DCR works to manage both urban and agricultural nutrients found in fertilizers, manure, biosolids and other sources so that they retain their efficient use yet don't impair the quality of Virginia's ground and surface waters.

DCR uses various strategies to encourage proper land application of fertilizer, manure and sewage sludge for agricultural and urban purposes. Nutrient management specialists in DCR's regional offices provide direct technical assistance to farmers. They develop site-specific nutrient management plans to help farmers with manure testing for nutrient levels, calibrate nutrient application equipment, and coordinate soil nitrate testing in agricultural crop fields.

Nutrient management staff members teach farmers about nutrient management practices through demonstration field days, farmer meetings and individual contacts. DCR also develops educational materials, such as brochures promoting benefits of nutrient management planning and best management planning, for farmers.

Our staff works with state universities to develop technology capable of maximizing efficient nutrient use and minimizing losses to ground and surface waters. For example, the development of a soil nitrate test for corn resulted in reduced nitrogen use by an average of 46 pounds per acre on fields where the test was used. DCR also uses satellite based global positioning system data to better account for farmers' efforts to curb nutrient and sediment loss from their operations.

Nutrient management training and certification

DCR also has a program to certify private and public sector nutrient management planners. Nutrient Management Training and Certification Regulations, which govern the program, were revised in January 2006. The regulations stipulate requirements for certification and criteria for nutrient management plans developed by certified individuals. DCR conducts training sessions and examinations every six months. There are more than 400 certified professional Nutrient Management Planners in Virginia.

The staff also works with DCR's Chesapeake Bay Local Assistance staff and soil and water conservation districts to facilitate preparation of Bay Preservation Act plans. These plans address soil erosion, nutrient management and integrated pest management on farms within Bay Preservation Areas as defined by Chesapeake Bay Preservation Area Designation and Management Regulations.

DCR employees are responsible for nutrient management plan approval for producers requiring a Department of Environmental Quality-issued Virginia Pollution Abatement (VPA) permit for confined animal operations and, in some cases, VPA and Virginia Pollution Discharge Elimination System (VPDES)

permits for the application of biosolids to land. Nutrient management field staff helps train water quality specialists employed by Virginia's soil and water conservation districts. Nutrient management specialists also provide plan writing assistance and support to approximately 20 counties that require farm nutrient management plans in local confined livestock zoning ordinances.

Poultry Litter Transport Incentive Program

DCR and the Virginia Poultry Federation now offer a poultry litter transport incentive program to facilitate the efficient use of poultry litter as a crop nutrient source in areas that most benefit from those nutrients. The aim is to encourage development of self-sustaining poultry litter markets in areas outside the Chesapeake Bay watershed. Through the program, assistance is provided at \$15 per ton of litter to help cover additional transportation costs. Click [here](#) to learn more about the program.

Tax credit program

Virginia has an innovative tax credit program for the purchase of more precise farm nutrient and pesticide application equipment. Recipients of the 25 percent tax credit must purchase equipment meeting state specifications and develop a nutrient management plan for their farm operations.

Agricultural Nutrient Management Program Goals

Virginia's Agricultural Nutrient Management Program has a long history of being one of the best programs in the US. The main source of reportable acreage is through 18 staff members who write about 90 percent of all of the animal operations plans each year, and fifteen to twenty of the private sector writing the bulk of the voluntary and cost share plans each year. Currently in the final stages of use is a new GIS based, client-server nutrient management program that maintains all current nutrient management plans on a secure server that totals up acreage by category, and also provides instant review and approval capabilities. It also provides a summation of all current acres, where in the 20 years previous, DCR only was able to obtain acreage from the private sector on an annual basis. This new software package being GIS based also provides quality assurance that all acreage is only counted once in the reporting system. DCR staff has begun using this software for the next 30 days to provide additional testing, and the private sector will obtain training and begin using same within the next two to three months. Outlined below are short term and long term goals focused around increasing acreage under nutrient management planning

Short Term Goals by 2015

- Develop a plan to involve un-permitted dairy farms in the Commonwealth to educate them on practices that can provide a benefit to them and the environment, including but not limited to nutrient management.
- Hire a specialist to work with the two Virginia Tech dairy specialists to concentrate on those smaller un-permitted dairies in increasing awareness and management techniques that will allow them to become more efficient in herd management and also become more environmentally friendly.
- Develop a small handy record keeping book to allow the farmer to keep better information regarding cropping systems and management of the everyday processes on the farm activities
- Begin to develop a program for confined beef operations following protocols that work best for dairy operations.
- Develop an outreach and educational program to reach operations of animal operations, and niche farmers by increasing cooperation with Virginia State University's Small Farm Outreach Program.
- Continue to work closely with Virginia Tech Grain and Forage personnel to promote nutrient management activities in their every day program.

- Continue to work with farmers on precision nutrient management and ag activities and promote small farmer demonstration projects in order to educate them on system can be profitable on small farming activities, while increasing efficiency, yields and prevent costly skips and overlaps.
- Develop a cost share or support program that will assist animal operations that are not permitted to be able to obtain nutrient management plans

Long Term Goals

- Develop a program to work with groups of farmers that beginning farmers, religious sects, disadvantaged, or on farming operations of less than 400 acres in size.
- Create a user-friendly program that will allow the general public to see how many acres of NMP's their jurisdiction has and inform them of ongoing water quality projects –TMDL related information
- Establish an cost-share program that will subsidize voluntary specialty crop farmer NMP's
- Create positions to support NMP writing for unpermitted animal operations
- Create grade school outreach programs that emphasize nutrient management BMP's

B.1.3 Agricultural Stewardship Act

Program Description and Goals

The Virginia General Assembly passed the Agricultural Stewardship Act (ASA) in 1996, §3.2 - 400 et seq. The program created by the ASA was fully implemented on April 1, 1997. The responsibility for the administration and enforcement of the ASA was given to the Commissioner of the Virginia Department of Agriculture and Consumer Services (VDACS). Through cooperation and coordination involving Virginia's Soil and Water Conservation Districts, VDACS, and the agricultural community, the ASA has provided a common-sense solution to water pollution problems caused by agricultural operations. Since 1997, the ASA program has responded to over 720 official water quality complaints.

Goals

- Identify real water quality problems and help farmers correct them in a commonsense manner that accommodates both the farmer and the environment;
- Establish a system that respects both the farmer and the person voicing concerns about water quality;
- Educate farmers about stewardship and encourage them to enhance stewardship even in instances in which a water quality problem cannot be proven in a legal sense;
- Support farmers in their efforts to strengthen stewardship practices, to provide them with the information they need, and to help link them to resources that can provide assistance;
- Educate the average citizen about normal farming practices that are not harmful to water quality regardless of their appearance; and,
- Provide Soil and Water Conservation Districts with training and the ASA materials they need to the extent that resources will allow.
- Respond to all water quality complaints in a timely fashion.
- Periodically follow up on past complaints to ensure implementation and best management practices are maintained.

Coordination and Partnerships

The ASA staff will utilize opportunities provided by meetings and field work to inform and update persons involved in ASA case investigations concerning the ASA program. The ASA staff will also represent the agency on several technical advisory committees and regulatory advisory panels, including: the Virginia Agricultural Best Management Practices (BMP) Program Technical Advisory Committee; Chesapeake Bay Total Maximum Daily Load (TMDL) *Phase II Watershed Implementation Plan* (WIP) Stakeholder Advisory Group; Resource Management Plan Regulatory Advisory Panel; Exploratory Shenandoah Valley Poultry Litter to Energy Watershed and Air Advisory Group; and Nutrient Trading Credit Certification Regulatory Advisory Panel.

Initiatives and Implementation

The VDACS- ASA program is assisting the Virginia Department of Environmental Quality- Agricultural Program Staff on a Small Animal Feeding Operation (AFO) Evaluation and Assessment Strategy. This strategy is a voluntary effort to address water quality concerns associated with animal confinement on a site specific basis without the need for additional regulations or permits.

Priorities

The VDACS- ASA program is strictly a complaint based program which does not allow for prioritization of specific watersheds. However, the program does target outreach efforts based on trends in the types of complaints received.

B.1.4 Virginia Resource Management Program

The Virginia Resource Management Program is a new program that will be fully implemented in 2014. This program has the potential to capture a large amount of currently unreported voluntary Best Management Practices (BMPs) and encourage the implementation/adoption of additional reportable BMPs on crop, hay and pasture land. These BMPs include a wide array such as nutrient management, soil conservation measures, stream exclusion fencing and buffers just to name a few. BMPs may be installed thru the Virginia Agricultural Cost Share (VACS) program, federal programs, or may be completely voluntary. The RMP Program is developing the tools and tracking systems needed to successfully assess Virginia's progress towards meeting applicable watershed implementation plan goals.

In return for implementing a high level of conservation practices on a farming operation, during the nine year life of an RMP certificate of implementation, the RMP area of a farming operation will receive "safe harbor" from any new state issued nutrient, sediment or bacterial water quality requirements that are not required by a federal or state permit. Once this nine year period has ended, if the operation wishes to continue in the program for an additional nine year cycle, the operation will be required to implement any new BMPs required by the minimum standards in place at the time of renewal.

The program has the potential to appeal to a significant sector of the agricultural community in Virginia and in turn, identify more existing voluntary BMPs as well as encourage the implementation of many new BMPs.

The Department of Conservation and Recreation is working closely with other departments to encourage the implementation of RMPs as a vehicle to meet the state's watershed implementation goals by 2025. The RMP is being considered as the "baseline" in the draft Virginia nutrient trading regulations. This could further increase the implementation of RMPs in Virginia.

Goals: Encourage the implementation of additional agricultural BMPs and to increase the reporting and verification of voluntary BMPs.

Objective 1: To develop methods of tracking and reporting BMP data associated with RMPs.

Strategies:

- Utilize existing Agricultural BMP Tracking Program
- Develop a stakeholder group to identify scope of a new computer module for RMPs
- Complete RMP module development and implement its use

Objective 2: To achieve widespread implementation of the RMP Program by agricultural producers.

Strategies:

- Provide funding for the development of RMPs
- Provide funding to the SWCDs for technical assistance
- Work with the Agricultural industry associations to utilize their influence and marketing
- Work with Soil and Water Conservation Districts (SWCDs) to promote RMPs
- Involve Virginia Cooperative Extension local agents to promote RMPs
- Work with leaders in agricultural communities to identify and target potential early adopters
- Continue promotion and development of the Resource Management Program. Develop RMPs on at least 40 agricultural operations annually by 12/31/2015.

B.1.5 Forestry Water Quality Program

Program Description and Goals

Water quality is important to all Virginians. Studies have shown that the cleanest water comes from forested watersheds. These watersheds are critical sources of pure drinking water; habitat for important fisheries, and areas that are treasured for their recreational value and purity of life. This is especially important when considering the Total Maximum Daily Load (TMDL) and Watershed Improvement Plan (WIP) that has been developed for the Chesapeake Bay. Two of the Department's important measures involve water quality. One focuses on Best Management Practices on forest harvesting operations and protecting streams from sediment. The other focuses on improving and protecting watersheds through management and land conservation.

The Virginia Department of Forestry (VDOF) inspects all timber harvesting operations to ensure that so that water quality is protected during the course of the harvesting activity and that the land is left in a stable condition. The backbone for the Department's water quality effort is the harvest inspection program, which began in the mid-'80s. This program has provided for one-on-one contact between VDOF and the harvest operators and a welcomed opportunity to educate the operators on BMPs and the latest in water quality protection techniques. VDOF also monitors BMP Implementation across the Commonwealth on timber harvesting operations in an effort to guard this resource. VDOF also has a major role in protecting watersheds through riparian forest buffers and afforestation of abandoned or unproductive open lands. Riparian forest buffers reduce erosion and cleanse water entering streams.

In July 1993, the General Assembly of Virginia – with the support of the forest industry – enacted the Virginia Silvicultural Water Quality Law, §10.1-1181.1 through §10.1-1181.7. The law grants the authority to the State Forester to assess civil penalties to those owners and operators who fail to protect water quality

on their forestry operations. Virginia continues to be the only state in the southeastern United States that grants enforcement authority under such a law to the state's forestry agency. Part of the law requires all harvesting contractors to notify VDOF of their intent to harvest timber and to provide the location of the operation. VDOF then conducts inspections of the harvest sites to insure that water quality is protected under the authority of this law. Another way that VDOF works with the timber harvesting operators is to offer cost-share assistance to through a unique program offered through the utilization of funding from the Commonwealth's Water Quality Improvement Fund (WQIF). This unique program shares the cost of the installation of forestry BMPs on timber harvest sites by harvest contractors. This program is offered as funding from the WQIF is made available to VDOF.

In addition, maintaining forest buffers along streams is one of the most effective ways to prevent both nutrient and sediment pollution from entering the stream channel and compromising the ecological integrity of the stream. This is done through an active riparian buffer establishment program as well as passively through retention of existing forest buffers during timber harvest operations utilizing the Riparian Forest Buffer Tax Credit Program administered by the DOF.

Goal: Provide technical services; best management practices information, and silvicultural activity enforcement on the Commonwealth's forest watersheds, non-tidal wetlands and riparian areas to help ensure the quality of drinking and recreational waters from these areas for future generations.

Objective 1: Protect and enhance water quality by increasing compliance with BMPs on forest harvest sites.

Strategies:

- Engage VDOF water quality specialists to provide more consistency to regional staff for implementation and enforcement of the water quality law.
- Utilize comprehensive Integrated Forest Resource Information System (IFRIS) to support the water quality law enforcement program that allows for harvest operation tracking from point of notification to inspection close-out.
- Identify BMP implementation rates by individual BMP practice groups and utilize that information to target specific training programs for the SHARP Logger Program.
- Inspecting timber harvest sites to ensure that sediment is not eroding into streams and waterways
- Monitoring streams for sediment deposition, and conducting field audits

Objective 2: Increase the amount of forestland protected and/or established in Virginia watersheds, with a priority on significant watersheds.

Strategies:

- Work collaboratively with partners, agencies and groups to establish new buffers as outlined in the *Riparian Forest Buffer Implementation Plan*.
- Provide educational opportunities for the general public, SWCDs, private forest landowners, the development community and forest products manufacturers through meetings, published literature and articles. These educational opportunities will be aimed at a combination of promoting an increase in the number of riparian plantings; encouraging wider riparian plantings, when possible, and educating landowners in significant watersheds on the importance of forests to water quality.
- Use available grants and cost-share funds to increase accomplishments of buffers in rural and urban areas; fund logger BMP cost-share, and provide watershed protection through the regional grant program.
- Make stakeholders aware of the Riparian Forest Buffer Tax Credit program. VDOF foresters will actively seek and promote areas for the riparian forest buffer tax credit, including pre-harvest plans; harvest inspection process, and forest management plans.

Objective 3: Mitigate the water quality impact of urban and suburban stormwater and impervious surfaces.

Strategies:

- Encourage and implement tree planting projects and forest management strategies that mitigate the effects of storm water runoff and improve water storage.
- Encourage municipalities to include using forests and trees as a significant component of storm water management in their storm water plans.

Coordination and Partnerships

VDOF coordinates with numerous partners and agencies to advance nonpoint source pollution control. VDOF partners with the Chesapeake Bay Foundation, Alliance for the Chesapeake Bay, many NGO's as well as the VA Association of SWCDs, Virginia Cooperative Extension, The Virginia Forestry Association, Virginia Loggers Association, Virginia Forest Products Association and the Sustainable Forest Initiative State Implementation Committee to promote water quality protection techniques. VDOF administers the Virginia Forest Landowner Education Program (VFLEP), in conjunction with numerous state, federal and private partners. VFLEP offers a wide variety of science-based educational opportunities for new and experienced forest landowners. VDOF also cooperates with the Southern Group of State Foresters Water Resources Committee (SGSF-WRC) on region-wide water quality issues and BMP reporting and is an active participant in the Chesapeake Bay Forestry Workgroup and various Bay Program initiatives.

Initiatives and Implementation

Logger Education:

One main focus of the VDOF water quality program is logger education. Since the development of the first BMP Manual for Virginia, the VDOF has been involved in the training of harvesting contractors in water quality protection techniques ranging from harvest planning, map reading and the use of GPS units to BMP implementation. This occurs through training that the agency conducted and, more recently, through VDOF participation in the SFI® SHARP (Sustainable Harvesting and Resource Professional) Logger Training Program. Since 1997, this program has enabled VDOF to assist in training 7,135 harvesting professionals in 229 programs relating to water quality protection.

In addition, the VDOF also promotes water quality protection and BMPs at various Trade Shows such as the Southeast Virginia 2013 Logging Expo in Franklin, Virginia. This Exposition is designed to interest possible new timber harvesters in getting started in the harvesting business, approximately 400 attendees were present to get the BMP message. VDOF also put the water quality message out at the East Coast Sawmill and Equipment Exposition every other year in Richmond, Virginia which attracts 10,000+ attendees as well as the State Fair of Virginia.

Forest Buffer Targeting Initiative:

Using geographic information system (GIS) technology, VDOF has initiated forest buffer targeting to identify areas that could benefit from the installation of a Riparian Forest Buffer. VDOF will contact landowners in these targeted areas to encourage possible project implementation. This work is being done in coordination with NRCS, FSA, SWCDs and the Chesapeake Bay Foundation. Grant funding has allowed VDOF to undertake this project in the northern Shenandoah Valley as well as the Central Piedmont Region of the Commonwealth.

Logger BMP Incentive Program:

VDOF offers cost-share assistance to timber harvest operators through a unique program offered through the utilization of funding from the Commonwealth's Water Quality Improvement Fund (WQIF). This unique

program shares the cost of the installation of forestry BMPs on timber harvest sites by harvest contractors. This program is very popular with harvesting contractors when funding is available from the WQIF.

Riparian Forest Buffer Tax Credit Program:

Virginia's Forestry BMPs that address harvesting have been highly successful. One of the most valuable BMPs for water quality is the uncut or partially cut streamside management zone. This voluntary measure assures an unbroken forest groundcover near the stream; shade for the water, and wildlife corridors. Landowners can elect to receive a state tax credit for a portion of the value of the uncut trees in the buffer. By doing so, they agree to leave the buffer undisturbed for 15 years.

Virginia Forest BMP Implementation Monitoring:

A statewide BMP monitoring system has been in place since 1993 to track trends in BMP implementation and effectiveness. This process was developed utilizing the [Southern Group of State Foresters BMP Monitoring Protocol](#): VDOF randomly selects 240 sites from the IFRIS database system and then conducts field visits to those sites to determine the extent of BMP Implementation. The results are summarized in an annual report that can be found at: <http://dof.virginia.gov/water/monitoring.htm>.

Priorities

Specific priorities for watershed protection are statewide implementation of the VDOF harvest inspection program as well as statewide uniform enforcement of the Silvicultural Water Quality law. When funded, the Logger BMP Cost Share Program is designed to be utilized in watersheds that have impaired stream segments. The VDOF is utilizing GIS technology to identify forests of highest conservation value and those forests that provide the highest water quality for source drinking water supplies. These areas in the future will be targeted for conservation.

Measures of success

Best Management Practices for forestry water quality protection have been developed, refined and studied over the past 40 years and are proven methods of preventing pollution from forestry operations. The Virginia Department of Forestry has been monitoring the implementation of Forestry BMPs since 1993 and has recently implemented a protocol in 2008 that further refines the monitoring process. This monitoring process allows the DOF to target specific areas for operator education and provides a comparison of how Virginia is doing relative to the rest of the Southern States in BMP implementation. One of the DOF State Agency Reporting measures for the Governor is directly related to control of active sedimentation from logging activity. Currently, that standard is set at a level of 98% of timber harvesting operations having no active sedimentation originating from their operations.

B.2 RESOURCE MANAGEMENT AND LAND CONSERVATION PROGRAMS

B.2.1 Land Preservation

Virginia Land Conservation 2014

Program Description

Land conservation in Virginia involves the efforts of many partners, including state and federal agencies, local governments, and land trusts. Together these partners reach out to landowners and encourage efforts to conserve priority lands such as farms, forests, natural areas, wildlife habitat, historic resources, parks, and public access to waterways. Many of these conserved lands provide water quality benefits in perpetuity by requiring riparian buffers and agricultural and forestal management plans. Other benefits include educational opportunities, protection of wildlife and natural habitat, and preservation of Virginia's scenic landscapes.

The following is a general listing of many of Virginia's land conservation programs, which are housed at different agencies.

The Virginia Department of Forestry owns state forestland, holds conservation easements, and manages several programs that provide cost-share assistance to land owners managing forests.

The Virginia Department of Agriculture and Consumer Services' Office of Farmland Preservation assists localities in developing Purchase of Development Rights programs and provides matching funding to compensate landowners who voluntarily preserve their farmland.

The Virginia Department of Historic Resources holds easements, owns land, and administers funds for permanent protection of Civil War battlefield lands.

The Department of Environmental Quality manages the Virginia Clean Water Revolving Loan Fund, which can provide low-interest loans for the permanent conservation of lands that protect water quality and preserve natural or other open space values of the property.

The Virginia Outdoors Foundation (VOF) was created by the General Assembly in 1966 (Code of Virginia §10.1-1800 et seq.) and is the largest easement holder in Virginia. VOF also administers the Open Space Lands Preservation Trust Fund (Code of Virginia §10.1-1801.1), which provides financial assistance to landowners to help cover the costs associated with conveying easements.

The Virginia Department of Game and Inland Fisheries maintains thirty-nine management areas totaling more than 203,000 acres. These management areas provide a variety of outdoor recreational opportunities, enhance wildlife habitat, and protect water quality. These lands are purchased and maintained with hunting, fishing, and trapping license fees and with federal Wildlife Restoration Funds.

The Department of Conservation and Recreation (DCR) manages State Parks, Natural Area Preserves, and the Conservation Reserve Enhancement Program, and supports the Virginia Land Conservation Foundation (VLCF) and the Land Preservation Tax Credit program. The Division of State Parks boasts 36 state parks comprising 70,000 acres located throughout the Commonwealth, from Cumberland Gap to the Atlantic Ocean. Parks not only protect natural resources and water quality, but also offer recreational and educational opportunities to the public to reconnect with nature through thousands of campsites, hundreds of cabins, more than 500 miles of trails, lakes, beaches, and convenient access to Virginia's major waterways.

DCR's Division of Natural Heritage represents a comprehensive effort to save Virginia's native plant and animal life and the ecosystems upon which they depend through inventory, conservation information provision, protection, and stewardship. As a member of NatureServe, the Virginia Natural Heritage Program contributes to an understanding of global biodiversity and helps to provide for the conservation and recovery of the earth's common, and rare and endangered species and threatened ecosystems.

DCR's Natural Heritage Program developed and maintains the Virginia Conservation Vision, a suite of computerized mapping tools for guiding strategic conservation decisions. Conservation Vision uses GIS to

map land conservation priorities, such as agricultural and forestal lands, watershed integrity, and cultural assets, based on information provided by private, local, state, and federal agencies. These mapping tools facilitate conservation by helping focus conservation efforts and by guiding comprehensive planning.

The Virginia Natural Area Preserves System (Code of Virginia § 10.1-213 et seq.) was established to protect some of the most significant natural areas in the Commonwealth. A site becomes a component of the preserve system once it is dedicated as a natural area preserve by the Director of DCR. Natural area dedication works in much the same way as a conservation easement by placing legally binding restrictions on future activities on a property. The Natural Area Preserve System includes examples of some of the rarest natural communities and rare species habitats in Virginia. This system now includes sixty-one dedicated natural areas totaling 55,352 acres. Most of the preserves are owned by DCR, but some are lands owned by local governments, universities, private citizens, and The Nature Conservancy (a private conservation organization).

The VLCF was created in 1999 (Code of Virginia §10.1-1017 et seq.) and provides grants to help fund the purchase of land and easements for certain categories of properties. This is a statewide competitive program to fund the protection of open spaces and parks; natural areas; historic properties; and farmlands and forests. These funds are available to state agencies, local governments, and non-profit groups. Grant amounts are based on applications for 50 percent or less of total project costs pursuant to specific criteria defined in each category. DCR provides staff and administrative support for the VLCF.

Virginia's Land Preservation Tax Credit program (Code of Virginia § 58.1-510 et seq.) began in 2000 and provides financial incentives to encourage land conservation by providing an income tax credit for 40 percent of the value of donated land or conservation easements. Taxpayers may use up to \$100,000 per year for the year of donation and the ten subsequent tax years. The tax credits may also be sold, allowing individuals with little or no Virginia income tax burden to take advantage of this benefit.

To be eligible for state tax credits, land donations must qualify as a charitable deduction under the IRS Code and meet additional requirements under the Virginia Land Conservation Incentives Act. DCR is responsible for verifying the conservation value of Land Preservation Tax Credits for all donations where the landowner claims a state tax credit of \$1 million or more. These applicants must meet the Conservation Value Review Criteria adopted by the VLCF Board. Donors claiming less than \$1 million in tax credits apply directly to the Virginia Department of Taxation, not through DCR.

Goals, Objectives, and Strategies

Through these multiple programs and partners Virginia's land conservation programs have achieved much success. As of June 2013, more than 3,841,500 acres of land (15.20 percent of the state) have been permanently preserved throughout the Commonwealth. Looking forward, Governor McAuliffe is crafting a new land conservation goal focused on conserving Virginia's most valued natural and cultural resources.

Objectives and strategies to meet Governor McAuliffe's goal will be developed in the coming months. However, the above existing state programs will contribute greatly to achieving the goal. The Governor's goal will significantly contribute to the current bay wide goal of an additional two million acres of conserved land from the 2010 baseline throughout the Bay watershed by 2025. There are no state specific goals set out to meet this two million acre goal at this time; however, Governor McAuliffe's goal is being designed to support the Bay goal.

Coordination and Partnerships

Advancing land conservation in Virginia, with an emphasis on the protection of quality resources will take a robust and concerted effort. State agencies will have to continue to coordinate with each other and call on local governments, soil and water conservation districts, land trusts, other land conservation partners, and federal agencies to maximize conservation opportunities and leverage available funding. Virginia has done an excellent job of mapping priority land conservation needs including those lands most important to protect water quality, forest and farmlands, natural areas, and other land conservation priorities. Concerted efforts remain underway to find and map the most biologically diverse (Healthiest) streams and watersheds in Virginia. The Commonwealth has also cooperated with partners to develop LandScope Virginia and LandScope Chesapeake and Natural Heritage Data Explorer to help the land conservation community be inspired and informed on land conservation needs. At this point it is unknown how much state funding will be available for land conservation in the coming years. There are several budget amendments introduced in the 2014 Session of the Virginia General Assembly ranging from funding for the purchase of land for new state parks to increased funding for the Virginia Land Conservation Foundation and other land conservation grant programs. . Also, with the passing of the new federal Farm Bill there is hope that Virginia will be able to take full advantage of available federal funds for programs including farmland preservation and wetland and grasslands protection. Other partnering opportunities exist with federal partners including protection of lands surrounding military bases, conservation corridors, and regional recreational trails.

Initiatives and Implementation

While state agencies and the VOF work statewide on land conservation, some agencies may have a programmatic focus. For example, the Department of Forestry works throughout the state and accepts donated conservation easements on forestland to ensure that sustainable forest management will continue on the property. Department of Historic Resources efforts are focused statewide on conserving historic and cultural resources such as architecturally or archeologically significant properties and civil war battlefields. Land trusts generally have a more localized geographic mission, such as the Williamsburg Land Conservancy prioritizing their conservation efforts on protecting significant natural, scenic, agricultural, and historic land in the lower James River and York River watersheds.

Implementation Priorities

Some state programs and land trusts prioritize their conservation efforts on protection of water quality and natural resources. Two funding incentives include the Land Preservation Tax Credit and Virginia Clean Water Revolving Loan Fund. The tax credit program requires conservation easements where the landowner is requesting more than one million dollars in tax credits to require riparian buffers of 35-feet in width or greater to protect water quality. Also, if historic or natural heritage resources are documented on the property, then the easement must provide protections of those resources. The Virginia Clean Water Revolving Loan Fund provides low-interest loans for the permanent conservation of lands that protect water quality and preserve natural or other open space values of the property.

Virginia's Natural Area Preserve System and State Parks protect lands that contain some of the rarest natural communities and rare species habitats in Virginia which depend on clean water. Some land trusts, such as The Nature Conservancy, also prioritize conservation of these unimpaired waters and habitats for protection.

Measures of success along with adaptive management

The Natural Heritage Program at DCR began digitally mapping the boundaries for agency owned and managed State Parks and State Natural Area Preserves in 1998. In August of 1999, DCR was designated as the lead agency in developing the Commonwealth's state-wide Conservation Lands Database. Since this mandate, the database has grown to include state, federal, private, and locally managed lands and conservation easements.

DCR is also responsible for tracking Virginia's progress toward several important land conservation goals. Initially DCR began tracking progress toward the Chesapeake Bay 2000 Agreement land conservation goal of protecting twenty percent of the Chesapeake Bay Watershed by 2010. DCR was also responsible for tracking the progress of former Governor Tim Kaine's 4-year, 400,000 acre Land Conservation Goal and tracking the second 400,000 acre Land Conservation Initiative set out by former Governor Bob McDonnell. This land conservation information is gathered from many sources on a monthly basis and managed within a geospatial and tabular Managed Areas Database. DCR includes these lands in the Conservation Lands Database as soon as an accurate boundary can be delineated.

DCR is continually reviewing and updating the Conservation Lands Database. Updated data are provided on a quarterly basis in March, June, September and December and posted on the DCR website for the Conservation Lands Database.

State agencies, localities, and land trusts have access to DCR's mapping programs and databases. These resources provide tools to comprehensively plan for land conservation, and to focus on geographic areas and subject matters of concern.

B.2.2 Virginia's Healthy Waters Program

Traditionally, water quality based programs have emphasized practice restoration of streams and improvement of degraded surface waters. This is very important but there are viable opportunities for best management practices to protect streams that are already considered healthy. Recognizing that it is generally far cheaper to conserve and protect healthy ecosystems than to restore them after they have been damaged, agricultural BMPs can serve a key role in the protection of healthy waters and healthy watersheds. The integrity (health) of aquatic ecosystems (streams) is tightly linked to the watersheds of which they are a part. There is a direct relationship between land cover, key watershed processes and the health of streams.

Virginia has nearly 200 ecologically healthy streams, creeks and rivers throughout the state, and there are more yet to be identified. Healthy streams are identified by factors that include: high numbers of native species and a broad diversity of species, few or no non-native species, few generalist species that are tolerant of degraded water quality, high numbers of native predators, migratory species whose presence indicates that river or stream systems are not blocked by dams or other impediments, and low incidence of disease or parasites. Healthy streams in Virginia have been identified and ranked through a stream ecological integrity assessment known as the **Interactive Stream Assessment Resource (INSTAR)**, <http://instar.vcu.edu/> as "exceptionally healthy," "healthy," or "restoration candidate." INSTAR was originally designed to assist individuals with planning and land use decisions by identifying healthy streams in their communities and encouraging their protection.

Some actions that typically support healthy waters protection:

- **Create, maintain, or expand riparian buffers:** Vegetative corridors of at least 35' in width buffer streams from activities in the watershed by intercepting runoff that would otherwise transport sediment and other pollutants to the stream. This is one of the most effective measures for protecting streams.
- **Protecting headwater streams:** Often intermittent, and therefore not recognized as a "blue line stream" and underserved by regulation these streams are extremely important to the natural function of downstream waters. Fencing livestock out of these areas can prevent downstream degradation of high quality perennial streams.
- **Maintain natural stream flow:** The natural, seasonal pattern of stream flow, the stream's response to storm events, and maintaining minimum flow levels may be as critical to a stream's health as water quality.
- **Protect natural stream channels:** Denying livestock unlimited access to stream channels reduces direct introduction of some pollution (bacteria) as well as limits the disturbance to habitat and the creation of erosion problems.

Agricultural BMPs that support the protection of healthy waters work in the same fashion as those that are implemented to restore impaired streams. Actions like creating filter strips, riparian buffers, wetland restoration, stream bank protection through fencing, development of alternate water sources for livestock, stream bank and channel stabilization, sediment and erosion control and capture all provide important mitigating factors in watersheds that have identified healthy streams.

Goals of the Virginia Healthy Waters Program include:

- Advance Healthy Waters program geo-referenced data sets. Update 10-year old data in Bay Watershed and develop an on-going maintenance plan by 12/31/2015.
- By 2025, 100% of state-identified currently healthy water and watersheds remain healthy

B.3 ONSITE SEWAGE MANAGEMENT

B.3.1 Onsite Sewage and Water Programs

Program Description

Onsite Program – The mission of the Virginia Department of Health (VDH) Office of Environmental Health Services, Onsite Sewage and Water Services program is to protect public health and ground water quality. This is best achieved by implementing an onsite wastewater program based on sound scientific, engineering, and public health principles. The Onsite Program is responsible for effectively adopting and implementing regulations for private wells, and onsite wastewater treatment and disposal. The program provides guidance, training, technical assistance, and administrative support to over 300 field staff. In addition, the program fosters and maintains communication with an onsite community made up of contractors, engineers, soil scientists, pumpers, academics, manufacturers, builders, real estate agents, and most especially, homeowners.

Goals

Onsite Program – In order to achieve the agency mission of protecting public health and ground water quality, certain regulations have been put into place. The Sewage Handling and Disposal Regulations (12

VAC 5-610) and Regulations for Alternative Onsite Sewage Systems (12 VAC 5-613) require a multiple step process to ensure compliance with the design and operation standards of the regulations. That process includes issuance of a construction permit for an onsite sewage system, receipt of a completion statement from both the designer and installer verifying compliance with the approved design, issuance of an operation permit, and, for alternative systems, a requirement for ongoing operation and maintenance activity with routine reporting to VDH. The routine reporting and owner/public reporting of problems prompt VDH to investigate potential failures and seek correction. The following program goals focus on the bay watershed; however, many have state wide applicability:

- Develop and implement operation and maintenance (O&M) portions of final Alternative Onsite Sewage Systems (AOSS) Regulations (12VAC5-613). Issue Manual and track implementation thru 12/31/2014.
- Train agency staff on new inspection, compliance, and enforcement procedures for alternative onsite sewage systems. Training will be offered to agency staff when the implementation manual is completed thru 12/31/2015
- Develop a Global Positioning System (GPS) guidance policy for VDH staff in order to facilitate a consistent approach to geolocating onsite sewage systems in the Bay watershed. Capture location of all new AOSS installed. VDH will focus on geolocating alternative onsite sewage systems installed.
- Work with DEQ and local governments to capture and report the number of septic tank pump-outs that occur as a result of the Chesapeake Bay Preservation Act requirements (local ordinances), voluntary efforts and repairs throughout the Bay watershed. 36,000 septic tank pump-outs each year thru 12/31/15.
- Work with DEQ and local governments to capture and report the number of connections to public sewer throughout the Bay watershed. 600 sewer connections by 12/31/2015. Track via Virginia Environmental Information System (VENIS) database or other mechanism.
- Report the number of alternative onsite sewage systems (AOSS) meeting the current BMP for 50% reduction, and the new BMPs for 20%, 38%, and 69% reduction, pending their final approval by the Chesapeake Bay Program. 2,870 lbs TN load reduction over baseline conditions at the edge of drainfield during the milestone period. The nitrogen requirements in the Virginia AOSS regulation became effective in December 2013.
- VDH continues to operate the VENIS database and look for ways to improve functionality. VDH continues to conduct extensive quality assessment and quality control of the data within the VENIS database in order to improve the agency's ability to deliver reliable information and to better track progress.
- Work with local governments and recipients of 319(h) Project Funding to capture and report the number of residential septic repairs and replacement projects, septic Tanks pumped and the number of connections of public sewer of failed septic systems or straight pipes completed throughout Virginia.

Coordination and partnerships

Onsite Program – The Onsite Program has a standing technical advisory committee that represents related interests in the onsite field such as soil scientists, engineers, designers, operators, environmental groups, and citizen groups. Additionally, sister agencies, the Department of Environmental Quality (DEQ) and the Department of Conservation and Recreation (DCR) are also represented. VDH has participated in EPA sponsored panels and committees that are related to improving the onsite program such as the development of best management practices. Currently, VDH is implementing a grant from the National Fish and Wildlife Foundation (NFWF) that provides funds to upgrade onsite sewage systems to improve water quality.

Initiatives and Implementation

Onsite Program – The Regulations for Alternative Onsite Sewage Systems were effective December 7, 2011. Those regulations include performance, operation, and maintenance (O&M) requirements for alternative onsite sewage systems. At a minimum a yearly inspection report is required for small systems with online reporting to VDH. Larger systems have renewable operating permits, routine sampling requirements, and more frequent operation and maintenance requirements. On December 7, 2013, additional requirements for nitrogen reduction in the Chesapeake Bay watershed were effective. In 2009, the state adopted regulations that require that licensed designers, installers, and operators be required for onsite systems. The compliance rate with the O&M requirements varies across the state, but is continually increasing. VDH has initiated a number of mailings to the owners of systems to remind them of their responsibilities. Civil penalties were recently adopted which will be helpful in gaining compliance.

Implementation Priorities

Onsite Program – The Onsite Program has been focused on moving regulatory initiatives forward along with the associated implementation guidance for those regulations. Guidance is the top priority to allow for consistent implementation of the Program. About 25% of the guidance has been completed. With the exception of the Chesapeake Bay Watershed, VDH does not specifically address impaired waters protection. The regulations are designed to minimize impacts to ground and surface waters statewide.

Measures of Success

Onsite Program – The Onsite Program does not have a field monitoring program. Currently VDH is using metrics such as the number of O&M reports received and the numbers of reported failing systems to monitor if the program is functioning as designed. Strategies will be modified to obtain compliance with the O&M requirements and to reduce failures as needed.

B.4 MARINA MANAGEMENT

B.4.1 Shellfish Sanitation

Program Description

Shellfish Sanitation – The mission of the Division of Shellfish Sanitation is to minimize the risk of disease from molluscan shellfish and crustacea products at the wholesale level by classifying shellfish waters for safe commercial and recreational harvest; by implementing a statewide regulatory inspection program for commercial processors and shippers; and by providing technical guidance and assistance to the shellfish and crustacea industries regarding technical and public health issues.

Goals

Shellfish Sanitation – The objective of the Division of Shellfish Sanitation is shared by VDH's mission in general 'to protect the public's health', but in particular to minimize the risk of disease from the consumption of shellfish. This is performed by conducting risk assessments based on data integrated from on-shore surveys that identify actual and potential sources of pollution that may affect the harvest area; water quality monitoring data to assess bacteriological and viral indicators of contamination; modeling of point sources to

estimate the extents of affected areas; and establishing harvest restrictions in areas identified as having unacceptable risk. These objectives are ongoing and continual, and have an educational component for public and private audience of stakeholders.

Coordination and Partnerships

Shellfish Sanitation – The Division works with local health department staff in identifying near shore properties that could cause nearby shellfish waters to have an increased risk from consumption of shellfish. The Division also works with academic groups serving in the forefront of the analysis of new scientific methods to determine where these risks could be further minimized. The Division also communicates findings and observations with the US FDA and other states both regionally and nationally in studying these risks and how to respond. The Division participates in the National Shellfish Sanitation Program and assists this program with the biennial (soon to be annual) release of the “Guide for the Control of Molluscan Shellfish” otherwise known as the “Model Ordinance.” This document is the backbone that guides the Division in its responsibilities concerning public health and shellfish consumption. The data generated by Division field staff follows protocols identified in the Model Ordinance and is shared as a by-product with other state agencies in their roles pertaining to fisheries management, conservation and environmental protection. This data is also shared with other states’ shellfish programs where similar issues are shared either geographically or in response to similar response efforts. This data is also shared with local government and private entities with their interests where ‘protection of public health’ pursuits dovetail with their efforts of improving water quality.

Initiatives and Implementation

Shellfish Sanitation – The Division has obtained grant funding to automate data entry in the field so as to minimize the time/effort in documenting these results of these tasks to provide a more detailed product defining these field conditions and to more quickly produce this data for better spatial analysis and more efficient modeling of higher risk areas.

Implementation Priorities

Shellfish Sanitation – The Division does not specifically address impaired waters protection. However, shoreline survey deficiencies documented by Division of Shellfish Sanitation field staff, and corrected by the land owners with the assistance of local health department staff, could have the duplicitous byproduct of reducing pollution in a given watershed.

Measures of Success

Shellfish Sanitation – In comparison to other states, the responsibilities of Virginia’s Shellfish Program shared by the Department of Health and the Marine Resources Commission. The Division of Shellfish Sanitation is evaluated annually by the FDA and, if no significant deficiencies are presented, is found ‘in compliance’, which allows Virginia shellfish products to be distributed as interstate commerce. While it is not the Division’s mission to maintain water quality standards, this seal of approval along with the absence of disease outbreaks (CDC definition) or the acceptable response per the FDA to outbreaks, is a measure of success.

B.4.2 Marina Program

Program Description

The Virginia Department of Health (VDH) Marina Program protects public health and the environment by educating boaters on the proper handling and disposal of sewage and regulating onshore boating operations. As the popularity of recreational boating and other aquatic activities increase, the proper disposal of sewage is critical. The Marina Program oversees regulations that require marinas and other places where boats are moored to have adequate sanitary facilities in order to protect public health and improve water quality.

Goals

The primary objective of the Marina Program is to ensure that pump-out or dump station facilities are available at marinas and other places for the safe disposal of sewage from marine vessels. The Marina Program issues the Certificate to Operate (CTO) and conducts the annual inspection of all Marinas, Other Places Where Boats are Moored, and boat ramps. The program also manages the Clean Vessel Act and the Boating Infrastructure Grants, both of which assist marinas in offsetting the cost of installing sewage collection systems and boating infrastructure.

Coordination and Partnerships

The Marina Program staff works in unison with other state and federal agencies and private sector companies to process applications and review plans for regulatory compliance.

Initiatives and Implementation

The marina inspection program is planning to identify the water supply source for all marinas, and will coordinate its efforts with VDH-ODW.

Implementation Priorities

The Marina Program targets efforts in the No Discharge Zones (NDZ) created and administered by the Department of Environmental Quality (DEQ), as well as other coastal areas and large inland lakes. This serves to protect special aquatic habitats or species, and safeguard human health by protecting drinking water intake zones.

Measures of Success

Marina Program measures of success are typically demonstrated through the completion of the annual inspection regime. The Marina Program focuses its efforts on those boating facilities that have encountered compliance issues.

B.4.3 Clean Marina Program

The [Virginia Clean Marina Program](#) promotes the voluntary adoption of measures that prevent or reduce pollution from traditional and non-traditional marinas, boatyards and recreational boats. Marina operators that adopt these measures are designated as "Virginia Clean Marinas."

This site is designed to help marina/boatyard operators find out how to become a "Clean Marina," but also includes other information on regulatory programs, clean boating, current events and activities in the industry and more. Anyone interested in the link between clean marinas and clean waters in VA should explore this site.

B.5 RESOURCE EXTRACTION PROGRAMS

B.5.1 Resource Extraction

Program Description

The Department of Mines Minerals and Energy (DMME) - an agency within the jurisdiction of the Secretary of Commerce and Trade - is the primary state agency involved with the regulation of resource extraction activities in Virginia. On active mining sites, all water discharges (including surface and ground water discharges) must flow through a National Pollutant Discharge Elimination System (NPDES) permitted discharge point, and are by definition a “point source.” No point source discharges are allowed from gas or oil well sites in Virginia. Operators of active mines are required by state law to implement management practices that control the release of sediment from the site and meet current state and federal effluent standards for point source discharges. These active sites also must be reclaimed to a stable condition once the resource extraction activity is complete.

Many resource extraction sites ceased operation before laws requiring reclamation existed. The *NPS Management Plan* addresses the identification, management and reclamation of these sites. The potential for NPS pollution impacts of abandoned/orphaned mines and wells on state waters is significant. Erosion and sedimentation from these sites can destroy aquatic habitat and ruin stream channels. Acid mine drainage (low pH), and the corresponding heavy metal contamination, can significantly impair the ability of a stream to support biota. Ground water contamination from abandoned/orphaned mines is also a concern.

DMME regulates resource extraction through three divisions. Each division has a program that through a mix of regulatory, financial and technical assistance addresses non-point source pollution from abandoned and orphaned sites. The Division of Mined Land Reclamation oversees the Abandoned Mine Land Program which assists with the reclamation of abandoned coal mines. The Division of Mineral Mining manages the Orphaned Land Program to address unreclaimed mineral mines. The Division of Gas and Oil administers the Oil and Gas Orphaned Well Fund. To date, DMME has identified approximately 57,760 acres of abandoned coal mined land and another 10,000 acres of orphaned mineral mined land. DMME has sealed 229 mine shafts, 1,302 tunnel/portals and approximately 20 oil and gas wells. At a cost of \$113,862,257, DMME has completed the reclamation of 20,540 acres of disturbed land.

Goals

It is the goal of the Department of Mines Minerals and Energy (DMME) and other federal and state partners to:

- Reduce water quality impacts associated with resource extraction activities by proper site planning and best management practice implementation
- Reduce nonpoint source pollution on abandoned/orphaned mined land
- Include water quality goals in prioritization of areas for reclamation activities. Enhance coordination between DEQ and DMME to collect and report BMPs installed on active mine sites as well as reclamation of active and abandoned and orphaned mines.
- Ensure compliance with permit conditions for proper site planning and best management practice implementation. Goal of 24,000 acres of Erosion and Sediment Control on Extractive Lands each year by 12/31/2015.
- Document and report reclamation of active and orphaned and abandoned mine sites. Goal 1,000 acres of mine reclamation by 12/31/2015.

Objectives

DMME will interpret and enforce Virginia mining and gas and oil laws consistently and review mining and drilling permits, taking appropriate action to ensure compliance.

DMME pursues the re-mining of abandoned/orphaned mine sites during or in association with active mining operations.

DMME will inventory, monitor, and report areas contributing significant sediments, and mine water discharges, to the water resources of Virginia and consider the pollution as part of the selection process for determining which sites will be reclaimed.

DMME investigates reported occurrences of environmental pollution including nonpoint source pollution and, when appropriate, takes jurisdictional action to eliminate, abate, or prevent water resource degradation.

Strategies:

DMME solicits funding for reclamation of approximately 20 sites/year.

Coordination and Partnerships

To enhance the scope of the NPS Program, DMME seeks partnerships and leveraged funding opportunities with the U.S. Environmental Protection Agency, U.S. Forest Service, U.S. Geological Survey, Virginia Department of Environmental Quality, Virginia Department of Game and Inland Fisheries, and other federal, state, and local agencies, and private entities and citizens.

The Natural Resources Conservation Service (NRCS) is actively involved in Virginia to mitigate nonpoint source pollution from resource extraction through the Watershed Protection and Flood Prevention Act of 1954 (Public Law 83-566) and supports DMME activities through implementation of BMPs that abate NPS pollution affecting water quality, coordinating their activities with landowners and Virginia's NPS pollution focused agencies and by providing funding and technical assistance to reclaim sites in Virginia.

In addition to DMME and the NRCS efforts, other agencies have programs focused on resource extraction-based NPS pollution issues. Virginia's Cooperative Extension Service (CES) is involved in a project in the Powell River Basin to increase awareness of the ground water hydrology and critical ground water zones in the counties of Buchanan, Wise, Dickenson, Lee, Russell, Scott, and Tazewell. CES is working to raise the awareness of the possible effects of underground mining and working with stakeholders to provide information on surface mine reclamation techniques to control the landscape's rate of water and sediment release and reduce downstream flooding potentials.

Initiatives and Implementation

In addition to the well developed abandoned/orphaned mine land inventory and monitoring efforts, DMME solicits funding for reclamation of approximately 20 remediation sites per year.

Funds for the remediation of abandoned coal mines are obtained through fees on coal mined in Virginia. Reclamation is accomplished in accordance with Title 45.1-260 of the Code of Virginia.

Funds for the reclamation of orphaned mines are obtained from interest monies earned from a state managed industry self-bonding program. Mine operators participating in the program make payments into

the Mineral Reclamation Fund based on the acreage disturbed by their operations. The fund assures that active mines will be reclaimed and participation is mandatory under Virginia's Mineral Mining Law (Title 45.1-197).

Funds for the reclamation of orphaned wells are obtained from the Oil and Gas Orphaned Well Fund. (Title 45.1-361.40)

Priorities

The inventory elements of the DMME abandoned/orphan mine programs provide the capability to target impaired water bodies as well as headwaters to streams known to support high quality or healthy waters. DMME has prioritized reclamation sites identified in the various inventories based on identified TMDL waters. The mine land inventories provide an ongoing basis for prioritizing and assessing program effectiveness.

Measures of Success

With thousands of mine sites, prioritization and on-site evaluations are key to program efficiency and effectiveness. Sites are evaluated for potential hazards to the environment and public health and safety. Site evaluations include soil and water investigations, studies on the feasibility of reclaiming the site, cost analysis, and seeking the landowner's consent to allow reclamation to proceed.

Through strategic planning, DMME seeks to enhance the development and conservation of energy and mineral resources in a safe and environmentally sound manner to support a more productive economy. By using targeted performance measurements to indicate progress on meeting agency operational goals and objectives, DMME ensures that current mining operations maintain water quality standards and abandoned/orphaned mine sites will systematically achieve water quality standards through cooperative reclamation efforts.

B.6 URBAN PROGRAMS

B.6.1 Background

Broadly defined as runoff from construction and development activities, stormwater has traditionally been classified as nonpoint source pollution. In fact, when describing nonpoint source pollution, stormwater has often been offered as a clear example of the diffuse runoff that exemplifies nonpoint source pollution. That description, while still applicable, is not the sole determinant in classifying stormwater as a nonpoint source of pollution.

As a result of federal regulatory changes resulting from the 1987 Federal Clean Water Act, stormwater is permitted as a point source if it is captured through a confined or discrete conveyance to a water body. Specifically, through federal stormwater regulations promulgated in 1990, National Pollution Discharge Elimination System (NPDES) permits are issued for Phase I municipal storm sewer systems (MS4) generally serving populations of 100,000 or greater. As the permitting authority in Virginia, NPDES permits are issued by the Department of Environmental Quality in the form of Virginia Pollution Discharge Elimination System (VPDES) permits. In 1999, regulations were promulgated for smaller, Phase II, urbanized areas. DEQ issues VPDES permits for operators of small MS4s in urbanized areas to discharge stormwater from outfalls. In addition to these permits, the 1987 Federal Clean Water Act established a Construction General Permit (CGP) for development activities that disturb one to five acres or for smaller land disturbing activities within a common plan of development. Among other requirements CGPs address erosion and sediment

control, post development runoff quantity and quality, and a requirement for a Stormwater Pollution Prevention Plan (SWPPP). Because it is issued as a VPDES permit, the CGP is classified as a point source permit.

As further described below, nonpoint source elements of Virginia's stormwater management framework include the Chesapeake Bay Preservation Act, the Virginia Erosion and Sediment Control Program, and the Virginia Stormwater Management Program Regulations. VPDES programs are not addressed in this plan as they are legally defined as point source pollution management programs. Virginia's stormwater management efforts were formally initiated in 1973 with the passage of the Virginia Erosion and Sediment Control Law. This legislation predates the stormwater provisions of the 1987 Federal Clean Water Act. Through the adoption of Virginia Erosion and Sediment Control Regulations, the state established erosion and sediment control and stormwater quantity control standards and specifications for land disturbing activities involving 10,000 square foot and larger. With passage of the Chesapeake Bay Preservation Act in 1988 and subsequent adoption of the Chesapeake Bay Preservation Area Designation and Management Regulations, the state of Virginia established and extended nonpoint source pollution control performance standards for land disturbing activities. In addition, the Commonwealth enacted the Virginia Stormwater Management Act in 2004. The Virginia Stormwater Management Program Regulations, permit local government stormwater management programs.

Federal Clean Water Act, Section 319 guidance establishes specific criteria for stormwater management funding eligibility. Section 319 funding may be used for any urban stormwater activities that supports but does not directly implement activities required by final MS4 permits, as well as activities that go above and beyond final MS4 permit requirements. The following are examples of potentially eligible activities:

- Technical assistance to state and local stormwater programs;
- Monitoring needed to design and evaluate the effectiveness of implementation strategies;
- Best Management Practices (BMPs) for pollution prevention and runoff control (except for BMPs that directly implement final MS4 permits);
- Outreach and education programs outside of the general scope outlined within the MS4 permits;
- Technology transfer and training;
- Development and implementation of regulations, policies, and local ordinances to address stormwater runoff (these may apply to areas covered by MS4 permits, provided that the regulations, policies, and ordinances apply to non-permitted areas as well); and
- Stormwater projects occurring outside of MS4 permit coverage areas.

The distinction between nonpoint and point source stormwater management programs centers on the legislative authority. State stormwater programs are defined as nonpoint source and federal stormwater mandates are clearly defined as point source programs. However this distinction becomes less clear as applied. For example, Erosion and Sediment Control standards and specifications are implemented to satisfy the Construction General Permit requirements. As Virginia continues to advance stormwater management, it is important to retain appropriate program distinctions to ensure funding flexibility is maintained. To help ensure efficient and effective program implementation the Virginia Department of Environmental Quality has initiated a strategic planning process for stormwater programs. This effort will inform future updates *Virginia Nonpoint Source Management Plan* and help ensure program flexibility.

B.6.2 Stormwater Management Program

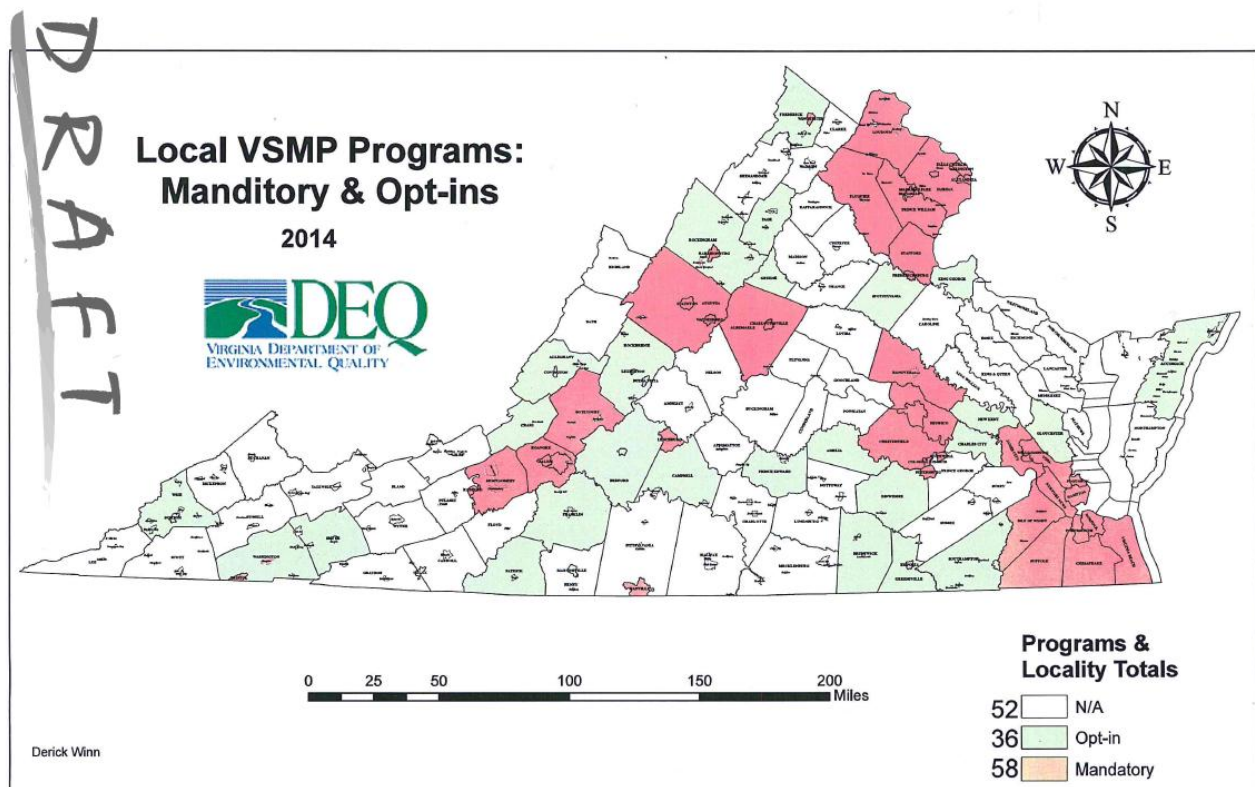
Stormwater runoff is water flowing overland into surface waters or water that is channeled into natural or constructed conveyance systems during and after precipitation. Unmanaged stormwater can cause erosion

and flooding. It can also carry excess nutrients, sediment and other contaminants into waters. Properly managed stormwater protects land and streams from erosion, flooding and pollutants.

During construction, an erosion and sediment control permit may be required. These land disturbance permits are issued by localities as part of their erosion and sediment control programs. DEQ conducts reviews of local erosion and sediment control programs.

A permit may be required to discharge stormwater from a construction activity. Such a permit also may be required to discharge stormwater through a conveyance system owned or operated by a government entity. DEQ administers these permits under Virginia Stormwater Management Program (VSMP) regulations, authorized by the Virginia Stormwater Management Act (§ 62.1-44.15:24 et seq).

The Stormwater Act and VSMP permit regulations provide DEQ the ability to manage the quantity and quality of stormwater runoff on construction sites as well as on a regional or watershed basis. The following map depicts the current status of locality adoption of the VSMP:



Quantity of stormwater runoff: Compared with impervious surfaces such as pavement or rooftops, pervious surfaces such as meadows and woodlands absorb and filter rainfall and reduce runoff. When development occurs in meadows and woodlands, the increase in impervious surfaces increases the amount of runoff that occurs when it rains. This can overwhelm waterways, causing erosion, localized flooding and property damage. Design of stormwater management controls to control the quantity of stormwater runoff is required by these regulations to ensure the protection of downstream properties and to minimize the potential for flooding.

Quality of stormwater runoff: Pervious and impervious surfaces in urban areas collect pollutants, such as automobile oil, grease, sediment, bacteria from animal waste, excess nutrients and pesticides, and deposits from airborne pollutants. Stormwater runoff with large amounts of these pollutants may enter nearby

waterways when it rains. Design of stormwater management controls to control the quality of stormwater runoff is required by these regulations to ensure the protection of local streams and waterways.

Technical assistance, financial assistance, education and research efforts are enhanced by funds available from the federal Nonpoint Source Pollution Control Program (Section 319 of the Clean Water Act) and the Chesapeake Bay Program. Assistance is provided to local governments, private organizations and the public by staff members located in the DEQ stormwater management offices.

- The goal of the program is to control stormwater from developed sites to protect downstream properties and local streams and to minimize the potential for flooding. The program is currently implemented by DEQ at the state level and is in the process of moving to the local level through the development of local VSMP programs. These local programs will operate in conjunction with existing local water quality programs. DEQ has provided substantial outreach, technical assistance, training (DEQ Stormwater Training Basic Course offerings), and financial assistance through two rounds of grants. Moving program implementation to the local level will improve compliance for the protection of local water quality and to minimize potential flooding.
- Complete development of “SMART” Stormwater Management and Restoration Tracker system to track, verify and report homeowner installed BMPs. The system will capture and report data in a format suitable for state Bay Model progress.
- Establish pollutant removal efficiencies for typical roadway vegetated shoulders and drainage conveyances thereby promoting the use of such practices over those employing impervious materials. VDOT will continue its interest in establishing pollutant removal efficiencies for these practices. Completion estimated by 12/31/2015.
- Provide stormwater management training to relevant stormwater personnel and contractors performing BMP review and inspection tasks. Trainings will be completed by 12/31/2015. Revise guidance documents to incorporate and promote the use of low impact development techniques and other innovative stormwater BMPs in roadway projects. Produce multiple guidance documents by 12/31/2015.
- Achieve reductions from new development and redevelopment using urban BMPs through ramped up compliance with the Virginia Stormwater Management permit (VSMP) and the stormwater provisions of the Chesapeake Bay Preservation Act (CBPA). Consolidated BMP tracking system will capture BMPs installed for both Chesapeake Bay Preservation Act and VSMP compliance. System will be completed by 12/31/2017.
- Mitigate the water quality impact of urban and suburban stormwater and impervious surfaces by encouraging and implementing tree planting projects and forest management strategies
- Encourage municipalities to include using forests and trees as a significant component of stormwater management in their storm water plans.
- Establish/certify Virginia Stormwater Management Programs (VSMP) for all required and voluntary localities

Coordination and partnerships

DEQ works with local erosion and sediment control programs and local Chesapeake Bay Preservation programs to ensure proper implementation of these regulations. DEQ serves in an oversight role of local programs and provides technical assistance, conducts inspections and conducts local program reviews.

Initiatives and Implementation

DEQ has provided substantial outreach, technical assistance, training (DEQ Stormwater Training Basic Course offerings), and financial assistance through two rounds of grants. DEQ has convened a Stormwater

Local Government Advisory Committee to assist with the development of local programs. This committee is comprised of local government representatives state-wide.

Priorities

The program is currently implemented by DEQ at the state level and is in the process of moving to the local level through the development of local VSMP programs. These local programs will operate in conjunction with existing local water quality programs. Moving program implementation to the local level will improve compliance for the protection of local water quality and to minimize potential flooding. The requirements for permit coverage include provisions to address TMDL and impaired waters.

Measures of Success

Success is measured by consistent compliance with the permit. Inspections of small and large (over 5 acres) construction sites and data from those inspections are the measures upon which to determine success. The program is currently implemented by DEQ at the state level and is in the process of moving to the local level through the development of local VSMP programs. These local programs will operate in conjunction with existing local water quality programs. DEQ has provided substantial outreach, technical assistance, training (DEQ Stormwater Training Basic Course offerings), and financial assistance through two rounds of grants. Moving program implementation to the local level will improve compliance for the protection of local water quality and to minimize potential flooding. For the implementation of local programs, success is measured through milestones met in the development of local programs. These milestones are set at intervals spanning the months of program development.

B.6.3 Erosion and Sediment Control

In accordance with the Virginia Erosion and Sediment Control Law, Regulations, and Certification Regulations, DEQ implements the state Erosion and Sediment Control program to help prevent destruction of property and natural resources caused by soil erosion, sedimentation and nonagricultural runoff from regulated "land-disturbing activities." Erosion caused by excessive water runoff is one of the most severe types of erosion in developing areas.

ESC regulations specify the "minimum standards" that must be followed on all regulated activities including: criteria, techniques and policies. State law explains the rights and responsibilities of local and state governments to administer erosion and sediment control programs, as well as those of property owners who must comply with them.

A network of local and government programs regulates most private projects involving a land-disturbing activity, while DEQ oversees state and federal activities. However, property owners are ultimately responsible for erosion and sediment control plan approval and implementation. Responsibility for ensuring compliance also extends to the developer, contractor, consultant and the public.

Construction Sites

Problems associated with construction activities, like soil erosion, water pollution, flooding, stream channel damage, decreased ground water storage, slope failures, and damage to adjacent or downstream properties can be successfully minimized by implementing erosion and sediment

control measures on construction sites. These measures help prevent soil movement or loss, enhance project aesthetics and eliminate appreciable damage to off-site receiving channels, property and natural resources.

B.6.4 Virginia Urban Nutrient Management

The Virginia Urban Nutrient Management (UNM) program has good internal structure and promising programs that have the potential to capture a large amount of acreage. The main source of reportable acreage for the UNM program in recent years has been from a commitment by the state to have nutrient management plans (NMP's) for all state-owned land as well enrolling concerned and motivated lawn care business operators in the program's Water Quality Agreement Program. Currently, the UNM program is going through an updating and expansion process that will give it the additional tools and tracking systems it needs to successfully meet the state's watershed implementation plan goals for UNM. These updates and expansions, outlined below in the short-term and long-term goals, are focused around improving the efficiency and accuracy of reported acreage.

Short term goals:

- Update nutrient management standards and criteria per 2013 legislation. Goal to train 110 urban nutrient management planners, 35 extension specialists and 600 Virginia Department of Agriculture and Consumer Services (VDACS) certified fertilizer applicators by 12/31/2015.
- Implement urban residential turf pilot projects in 6 communities by 12/31/2015.
- Begin development of cost-share program for golf course nutrient management. Commitment of urban nutrient management plans completed on 11,000 acres of golf courses by 12/31/2015.
- By 12/31/2015; 85% of state owned facilities will have active plans.
- Improve tracking and reporting of urban nutrient management including state-owned facilities and local government lands. Commitment of 60,000 acres of urban nutrient management each year thru 12/31/2015.
- Develop a more visible UNM program
 - Expand the planner directory to enhance private planner advertising opportunities
 - Expand and improve the quality of UNM education outreach material
 - Overhaul the UNM website to promote quick access to program information
- Increase the effectiveness of the Water Quality Agreement Program
 - Create a user-friendly database that can be searched by end users
 - Create an online enrolling and reporting system for lawn care operators
 - Develop dynamic outreach materials to capture new participants
- Create a comprehensive approach for capturing more private landowner NMP's
 - Expand relationships with Virginia Master Gardeners and County Extension Agents
 - Continue to seek funding opportunities for volunteer NMP's on private land
 - Create and Launch the "One Yard at a Time" campaign
 - The campaign's focus is to inform and provide support to private landowners to have NMP's written for their property
- Improve UNM accountability
 - Create an online reporting system for certified planners
 - Create a NMP auditing system. The auditing system will investigate plan compliance and implementation

- Create a Water Quality Agreement auditing system. The system will be focused on spreader calibration, crew training and specific fertilization practices
- Increase Acreage
 - Approve NMP's for 75% of all golf courses in the state
 - Continue to approve state-owned lands and tighten renewal system
 - Increase continuing education training events for active planners who have a need for particular knowledge or skill set
 - Create a clearing house for NMP work "to be done"
 - Clients list job information and planners respond and bid for the work

Long term goals

- Create an online NMP request for approval and submittal portal on the DCR website
- Create a user-friendly program that will allow the general public to see how many acres of urban NMP's their jurisdiction has and inform them of ongoing water quality projects –TMDL related information
- Establish an urban cost-share program that will subsidize voluntary urban NMP's
- Create positions to support urban NMP writing for private landowners
- Create grade school outreach programs that emphasize urban BMP's

C. SECTION C Multi-Sector Programs

C.1 CHESAPEAKE BAY AND COASTAL ZONE MANAGEMENT PROGRAMS

C.1.1 - Chesapeake Bay Program

Significant efforts have been taken and resources expended throughout the 64,000-square-mile Chesapeake Bay watershed to restore the water quality and living resources of the Bay. Virginia's efforts are guided through the [Chesapeake Bay Total Maximum Daily Load \(TMDL\)](#) and the [Chesapeake Bay Program](#).

The Chesapeake Bay Program is a multi-governmental cooperative partnership between [Virginia](#); [Pennsylvania](#); [Maryland](#); Washington, D.C.; the [Chesapeake Bay Commission](#), a tri-state legislative body; and the [U.S. Environmental Protection Agency \(EPA\)](#). The EPA works locally through its [Chesapeake Bay Program](#) located in Annapolis, Md. The top executive from each Bay program participant -- the governors of each state, the mayor of the District of Columbia, the EPA administrator, and the Chesapeake Bay Commission chairman - make up the Chesapeake Executive Council, which has been directing the Bay restoration since 1983.

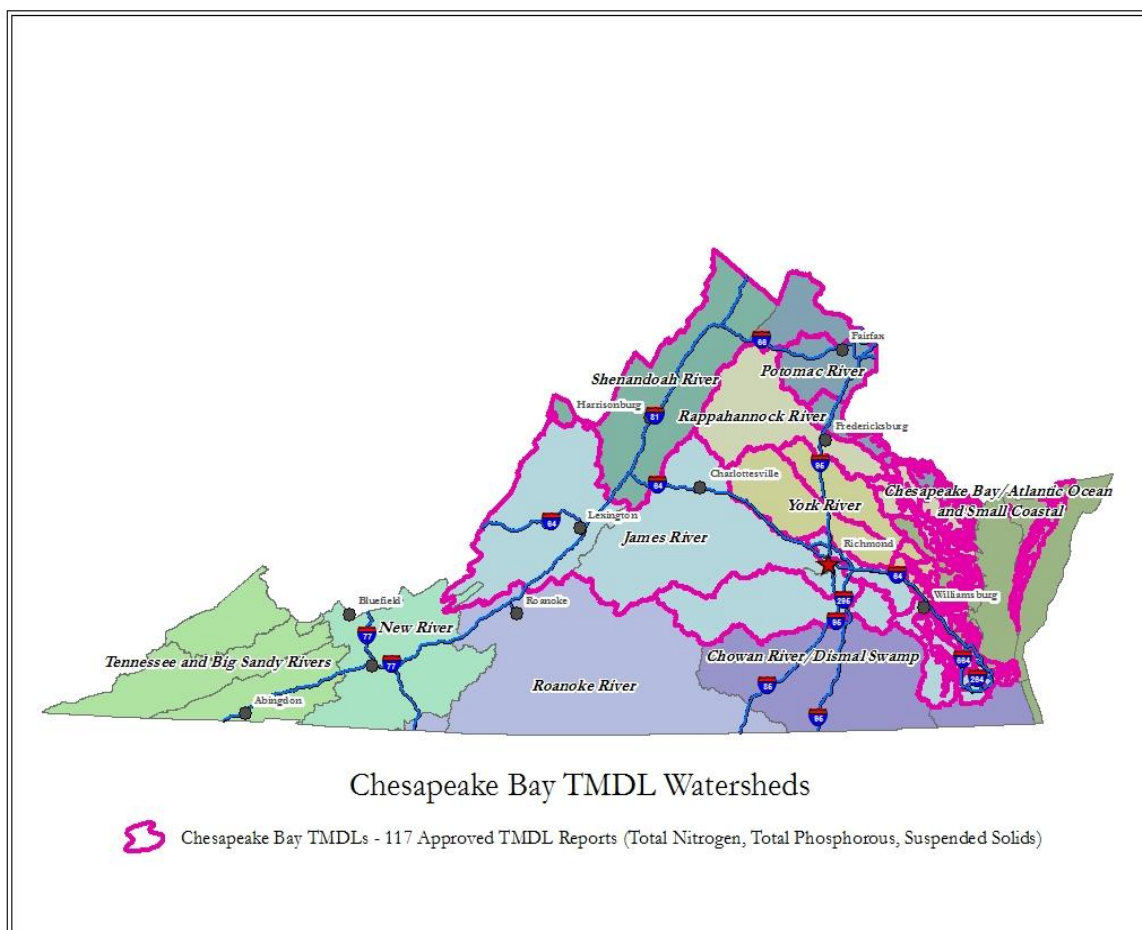
Representatives from each of the jurisdictions, along with officials from other federal agencies, local governments and citizen representatives, meet regularly to carry out the policies set by the Chesapeake Executive Council's [Chesapeake 2000 Agreement](#). In 2014 the Executive Council negotiated a new

[Chesapeake Bay Watershed Agreement](#) that will be signed June 2014. The new agreement includes representation from New York, West Virginia and Delaware.

Vision Statement of 2014 Chesapeake Bay Watershed Agreement:

“Chesapeake Bay Program partners envision an environmental and economically sustainable Chesapeake Bay watershed with clean water, abundant life, conserved lands and access to water, a vibrant cultural heritage and a diversity of engaged citizens and stakeholders.”

The Department of Environmental Quality (DEQ) works with other state agencies, local governments and citizens through its Chesapeake Bay Program in these general areas: nutrient point source reduction, toxic substance reduction, a monitoring program and other goals set out in the Chesapeake 2000 Agreement. The Bay TMDL addresses all segments of the Bay and its tidal tributaries that are on the impaired waters list for nitrogen, phosphorus and sediment. As with all TMDLs, a maximum aggregate watershed pollutant loading necessary to achieve the Chesapeake Bay’s water quality standards has been identified. The following map depicts that Chesapeake Bay Watershed along with bay tributary river basins:



Virginia's Watershed Implementation Plans for the Chesapeake Bay

In accordance with EPA expectations, the jurisdictions' [Chesapeake Bay Watershed Implementation Plans \(WIP\)](#) are designed to accomplish a set of allocation goals identified in the Chesapeake Bay TMDL. EPA

recognizes that it will take time to develop the level of detail the jurisdictions are expected to include in their WIPs. As a result, the WIP development process has been divided into three distinct phases.

Development of the Phase I Watershed Implementation Plan

The initial Phase I Plan is intended to provide information to EPA to consider when it establishes wasteload and load allocations within each of the 92 segments listed as impaired. The Phase I WIP includes a description of the authorities, actions, and control measures (to the extent possible) that will be implemented to achieve these point and nonpoint source TMDL allocations. For more information, view the [Phase I WIP](#) document.

Development of the Phase II Watershed Implementation Plan

The [Phase II plan](#) was developed with the assistance of a Stakeholder Advisory Group convened by the Secretary of Natural Resources and submitted to EPA on March 30, 2012.

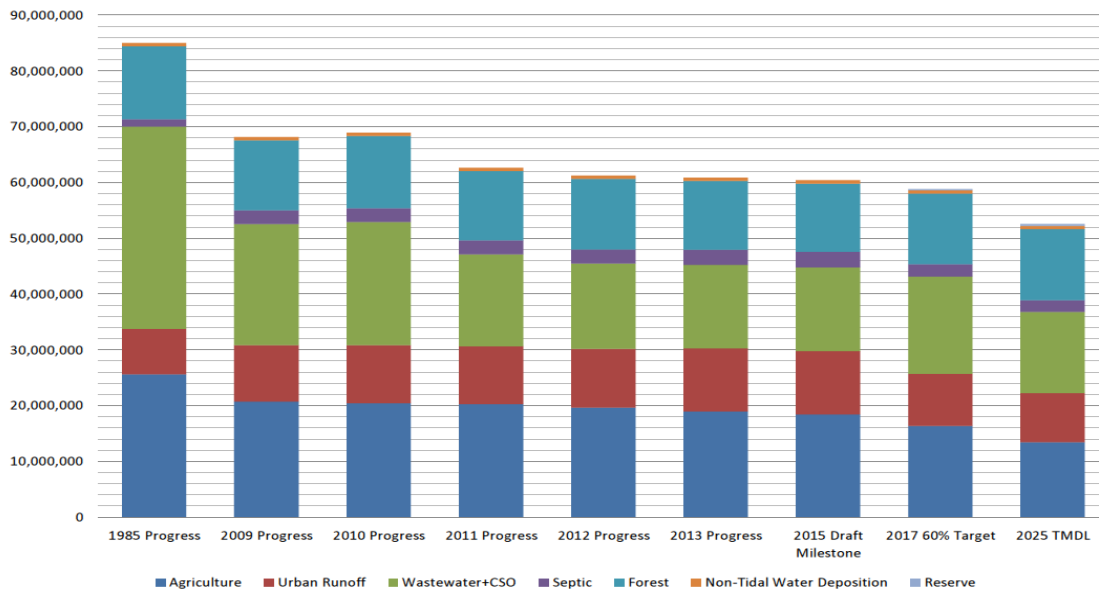
Bay Program Goals

The [Chesapeake Bay 2014-2015 Programmatic Milestones](#) process is part of an accountability framework established to ensure ongoing implementation of the *Watershed Implementation Plan* and Chesapeake Bay TMDL. As noted in the Milestone and Tracking Section of this plan, the Chesapeake Bay and Nonpoint Source planning efforts have been aligned to ensure coordination, efficiency and program effectiveness. Bay program specific goals include the following:

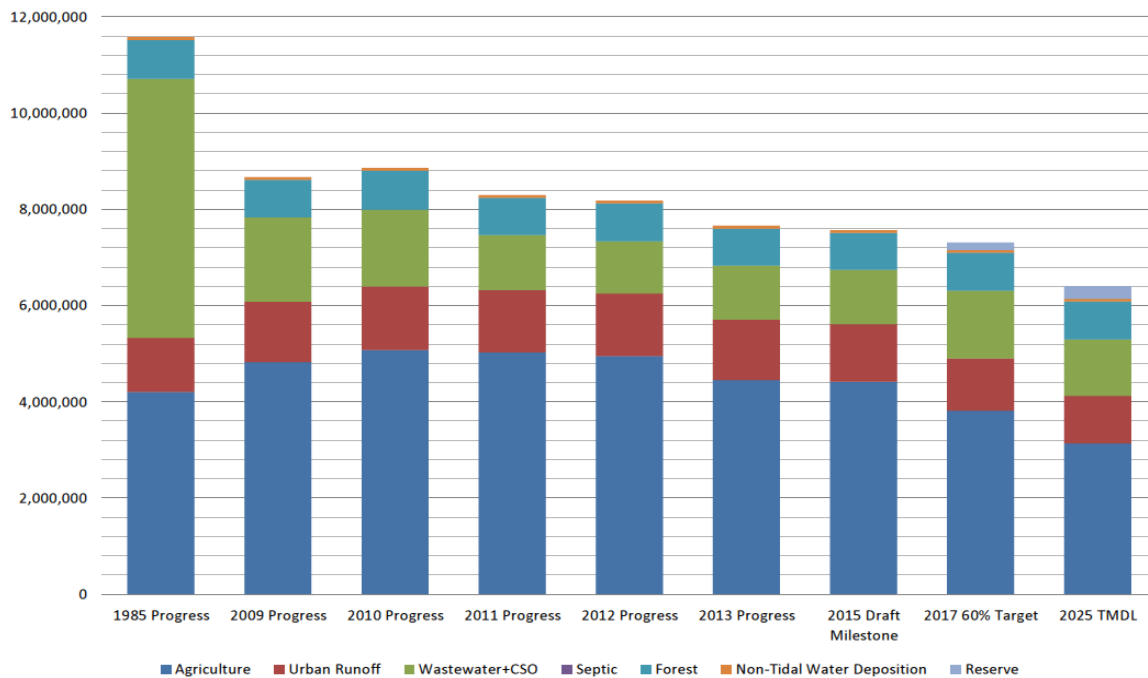
- Develop Chesapeake Bay WIP Milestones every two years (2016-2017, 2018-2019).
- Track, implement and report on all Chesapeake Bay WIP 2-year Milestones (2014-2015, 2016-2017, and 2018-2019).
- Report on Bay wide BMP activities related to Chesapeake Bay WIP accomplishments through NEIEN BMP submissions annually

The following charts depict nitrogen, phosphorous, and sediment reduction progress and targets established in the Virginia Chesapeake Bay TMDL and that are reported every 2 years:

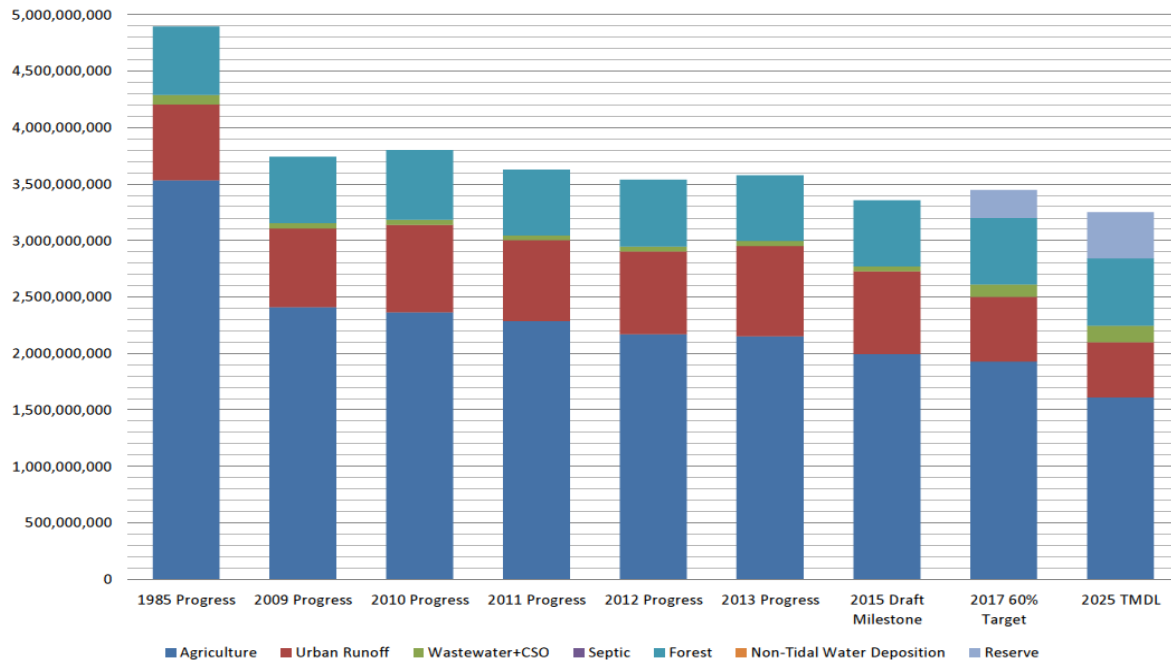
Virginia Estimated Delivered Nitrogen Loads Lbs TN/Year CBWM v5.3.2



Virginia Estimated Delivered Phosphorus Loads Lbs TP/Year CBWM v5.3.2



Virginia Estimated Delivered Sediment Loads Lbs TSS/Year CBWM v5.3.2



C.1.2 - Chesapeake Bay Preservation Act Program

Program Description and Goals

The Chesapeake Bay Preservation Act (Bay Act) was enacted by the Virginia General Assembly in 1988 as a critical element of Virginia's non-point source management program.

The Bay Act program is designed to improve water quality in the Chesapeake Bay and other waters of the State by requiring the use of effective land management and land use planning. At the heart of the Bay Act is the concept that land can be used and developed to minimize negative impacts on water quality. The first sentence of the Bay Act serves as a theme for the entire statute:

"Healthy state and local economies and a healthy Chesapeake Bay are integrally related; balanced economic development and water quality protection are not mutually exclusive."

Virginia designed the Bay Act to enhance water quality and still allow reasonable development to continue. The Bay Act balances state and local economic interests and water quality improvement by creating a unique cooperative partnership between state and Tidewater local governments to reduce and prevent nonpoint source pollution. The Bay Act recognizes that local governments have the primary responsibility for land use decisions, expanding local government authority to manage water quality, and establishing a more specific relationship between water quality protection and local land use decision-making.

The Bay Act is an extension of the public trust doctrine and, like many other environmental protection programs, allows the Commonwealth to manage certain aspects of the environment for the benefit of all

Virginians. The Bay Act Program is the only program in Virginia state government that deals comprehensively with the relationships between water quality, and land use planning and development. It is also the only program that assists local governments with land use planning needs to meet water quality goals: the development of land use regulations, ordinances and comprehensive plans.

Implementation

The Chesapeake Bay Preservation Area Designation and Management Regulations were originally adopted in 1989 and were amended in 1991, 2001 and in 2012 as part of the Integration Bill.

The Bay Act charges the State Water Control Board with the following responsibilities:

- Promulgating and keeping current regulations that establish criteria for local Bay Act programs
- Ensuring that local government comprehensive plans, zoning ordinances, and subdivision ordinances are in compliance with the Bay Act regulations
- These land use ordinances and plans comprise the local Bay Act program and must meet the requirements of the regulations.
- Providing technical and financial assistance to Tidewater local governments Technical assistance has been provided in a number of ways, including: publications, research projects, provision of computer equipment, providing training for local government planners and engineers, and other direct staff assistance.

Financial assistance has been provided through (1) a competitive grants program for localities and planning district commissions that began in 1990, and (2) a grant program for Soil and Water Conservation Districts in Tidewater to develop agricultural soil and water quality conservation plans on farmlands within Chesapeake Bay Preservation Areas. Providing technical assistance and advice to regional and state agencies on land use and water quality protection Bay Act staff help the board and Tidewater local governments, planning district commissions, and Soil and Water Conservation Districts participating in the program. The staff also provides assistance in other regional efforts, including the development of watershed restoration plans and participation on committees and work groups of the Chesapeake Bay Program.

Local Bay Act Programs

The lands that make up Chesapeake Bay Preservation Areas are those that have the potential to impact water quality most directly. Generally, there are two types of environmentally sensitive lands: Resource Protection Areas (RPAs), and Resource Management Areas (RMAs). RPAs protect and benefit water quality, while RMAs have the potential to damage water quality without proper management. By carefully managing land uses within these areas, local governments help reduce the water quality impacts of nonpoint source pollution and improve the health of the Chesapeake Bay.

Each Tidewater locality must adopt a program based on the Chesapeake Bay Preservation Act and the Chesapeake Bay Preservation Area Designation & Management Regulations. The Act and regulations recognize local government responsibility for land use decisions and are designed to establish a framework for compliance without dictating precisely what local programs must look like. Local governments have flexibility to develop water quality preservation programs that reflect unique local characteristics and embody other community goals. Such flexibility also facilitates innovative and creative approaches in achieving program objectives. The regulations address nonpoint source pollution by identifying and protecting certain lands called Chesapeake Bay Preservation Areas. The regulations use a resource-based approach that recognizes differences between various land forms and treats them differently.

Local Bay Act programs include:

- A map generally depicting Chesapeake Bay Preservation Areas.
- An ordinance containing performance criteria pertaining to the use, development and redevelopment of land.
- A comprehensive plan or revision that incorporates the protection of Chesapeake Bay Preservation Areas and of the quality of state waters.
- A zoning ordinance that incorporates measures to protect the quality of state waters.
- A subdivision ordinance that incorporates measures to protect the quality of waters of the state.
- A plan of development process prior to the issuance of a building permit to assure that the use and development of land in Chesapeake Bay Preservation Areas is accomplished in a manner that protects the quality of state waters.

Bay Act Program Goals

- The primary goal of the program is the implementation of consistent and effective local programs for the protection of tidal waters in the Chesapeake Bay watershed. Strategies to ensure success are the provision of technical assistance through DEQ's Chesapeake Bay liaison staff and the conduction of compliance reviews of local programs every five years.
- Conduct compliance reviews of local Chesapeake Bay Act programs once for each locality by 2019.

Coordination and partnerships

Local programs operate in cooperation with Soil and Water Conservation districts other local governments, developers and citizen groups to ensure compliance and effective implementation of the program. These partnerships include DEQ liaison staff who facilitate cooperation. Liaisons also work with federal facilities to ensure implementation of the program through Environmental Impact Reviews.

Initiatives and Implementation

The state Chesapeake Bay Program has provided numerous workshops and trainings for localities, developers and citizen groups. DEQ Chesapeake Bay liaison staff also provide technical assistance on a regular basis.

Priorities

The Chesapeake Bay Preservation Act requires that localities delineate Chesapeake Bay Preservation Areas, Resource Management Areas and Resource Protection Areas, with specific criteria and requirements to ensure protection of tidal waters.

Measures of Success

- Success is measured through the implementation of compliant local programs.
- Compliance reviews are conducted on local programs by DEQ staff every five years.
- DEQ provides technical assistance on a regular basis to local programs to ensure that they implement the program efficiently and effectively.

C.1.3 - Coastal Nonpoint Source Program

With full approval from the National Oceanic and Atmospheric Administration and the U.S. Environmental Protection Agency, Virginia's Coastal Nonpoint Program has been in the implementation phase since the late 1990s. Virginia's Coastal Nonpoint Source Program is facilitated by the Virginia Coastal Zone Management (CZM) Program and implemented by CZM agency partners such as Virginia Department of Transportation (VDOT), Virginia Health Department (VDH), Virginia Department of Conservation and Recreation (DCR), the Virginia Department of Forestry (DOF), the Virginia Marine Resources Commission (VMRC), the Virginia Institute of Marine Science (VIMS) and Virginia Commonwealth University (VCU) along with local and region governments from the eight coastal planning districts.

The Coastal Nonpoint Program focuses on pollution prevention, minimizing the creation of polluted runoff rather than cleaning up already contaminated water, which can be a very difficult and expensive process. The program encourages pollution prevention efforts at a local level, particularly improvements to land use planning and zoning practices to protect coastal water quality.

Coastal Nonpoint Program implementation through the Coastal Zone Management Program as described below. Relevant initiatives include: Coastal Resource Protection, Shoreline Management, Protecting Blue and Green Infrastructure, Managing Special Coastal Places, Coastal Land Conservation, the Healthy Waters Initiative, and technical assistance provided through the framework established by the Nonpoint Source Education for Municipal Officials (NEMO) network.

Absent a dedicated state or federal funding stream, implementation of the enforceable policies and mechanisms that form the basis of the Coastal Nonpoint Source Program has been advanced by leveraging available state and federal grants. In particular, Coastal Zone Management, Section 309 and Clean Water Act, Section 319 funding has been instrumental in program implementation.

Program Goals and Milestones

The DEQ Coastal Zone Management Program has facilitated cooperative implementation and capacity building at the local government level through the Five year Section 309 Strategy. Through a needs assessment and the interagency Coastal Policy Team process, managing cumulative and secondary impacts of growth and development was identified as a top Coastal Zone Management Program priority. This focal area is closely aligned with Coastal Nonpoint Program implementation.

For the ensuing two year period, a competitive process will be used to direct water quality projects implemented through regional governments. An outcome of the 309 Strategy is the development of enforceable policy development and implementation. The Hampton Roads and Middle Peninsula Planning District Commissions are coming to the end of policy development under the current grant cycle.

C.1.4 - Coastal Zone Management

Program Description and Goals

The Virginia Coastal Zone Management (CZM) Program is a **network of Virginia state agencies and local governments**, established in 1986 through an Executive Order, which administers enforceable laws, regulations and policies that protect coastal resources and foster sustainable development within the coastal zone boundary.

The Virginia CZM Program was established through an Executive Order, which is renewed by each new governor. The Executive Order “*directs all state agencies to carry out their legally established duties consistent with this Program and in a manner that promotes coordination among all government agencies. The Department of Environmental Quality shall serve as the lead agency for this networked program and shall be responsible for allocation and assignment of all federal funds received for the Virginia Coastal Zone Management Program Implementation Grant.*”

The Program's mission is to create more vital and sustainable coastal communities and ecosystems. Highlighted goals are relevant to controlling nonpoint source pollution in Virginia's coastal zone.

Coastal Resource Protection

Goal: To protect and restore coastal resources, habitats, and species of the Commonwealth. These include, but are not limited to, wetlands, subaqueous lands and vegetation, beaches, sand dune systems, barrier islands, underwater or maritime cultural resources, riparian forested buffers, and endangered or threatened species.

Goal: To restore and maintain the quality of all coastal waters for human and ecosystem health through protection from adverse effects of excess nutrients, toxics, pathogens, and sedimentation.

Goal: To reduce or prevent losses of coastal habitat, life, and property caused by shoreline erosion, storms, and other coastal hazards in a manner that balances environmental and economic considerations.

Coastal Resource Sustainable Use

Goal: To provide for sustainable wild fisheries and aquaculture.

Coastal Management Coordination

Goal: To ensure sustainable development on coastal lands and support access for water-dependent development through effective coordination of governmental planning processes.

Goal: To avoid and minimize coastal resource use conflicts through research, planning, and a forum for coordination and facilitation among government agencies, interest groups, and citizens.

Goal: To promote informed decision-making by maximizing the availability of up-to-date educational information, technical advice, and scientific data including the use of new tools such as marine spatial planning.

Coordination and Partnerships

The VA CZM network includes: many state agencies, the 8 coastal Planning District Commissions, 48 Tidewater cities and counties, and many federal, academic, business and environmental NGOs.

Initiatives and Implementation

- Managing Ocean Resources and Marine and Spatial Planning Virginia CZM is working with the CZM programs of Maryland, Delaware, New Jersey and New York to coordinate measures to protect the region's ocean resources. MARCO Regional Mapping and Planning Portal is on-Line! Go to Virginia CZM Program Ocean Planning issue page <http://portal.midatlanticocean.org/portal/>.

- Shoreline Management Virginia CZM helps protect the ecological integrity and stability of Virginia's shorelines through guidance on shoreline management for localities, local shoreline management studies and plans. Go to Virginia CZM Program Shoreline Management Issues page. In partnership with VIMS, Virginia CZM has helped develop "Living Shorelines" design guidelines, training for contractors and local officials, and an improved website to help meet an increasing demand for this natural alternative to shoreline hardening.
- Protecting Blue and Green Infrastructure Virginia CZM is leading an effort to map Virginia's land- and water-based resources and provide citizens and resource managers a comprehensive and user-friendly online portal to this information - Virginia Coastal Geospatial and Educational Mapping System (GEMS), including an assessment to rank terrestrial and aquatic areas for their ecological value - Coastal Virginia Ecological Value Assessment (VEVA). Go to Virginia CZM Program Blue and Green Infrastructure Issue page. Coastal GEMS Successes Fact Sheet - June 2012 (pdf), Coastal VEVA Fact Sheet - June 2012 (pdf).
- Managing Special Coastal Places The Virginia CZM Program has been using a special coastal zone management approach called Special Area Management Planning to help resolve local land use conflicts with local partners in special areas in Virginia's coastal zone. SAMPS are designed to bring together all levels of government (eg. Federal, state and local) to achieve SAMP goals. SAMPS were completed in the the Southern Watersheds of Chesapeake and Virginia Beach, and in Northampton County and are currently being implemented in the Dragon Run watershed and on the Seaside of Virginia's Eastern Shore.
- Virginia Seaside Heritage Program Between 2002 - 2009, the Virginia CZM Program invested \$2.6 million to restore and protect a global treasure - the aquatic resources of the barrier islands, bays, and salt marshes along Virginia's Eastern Shore.
- Coastal Land Conservation Virginia CZM acquires and protects sensitive coastal habitat. Section 306A of the federal Coastal Zone Management Act allows state CZM Programs to use up to 10% of their federal funds for acquisition of fee simple or other interests in land. The Virginia CZM Program sets aside \$200,000 each year for land acquisition. The Program seeks parcels that are in need of protection because they contain rare habitat types and because they afford opportunities for passive public access and public education. Since 1991, Virginia CZM grants have resulted in the acquisition of over 2,349 acres.
- Oyster Restoration and Education Educating Virginia's citizens about the benefits of oysters, oyster reefs, and oyster gardening continues to be a goal of the Virginia CZM Program.
- Eelgrass Restoration and Education Restoring seagrass beds, a critical coastal habitat has been a priority for the Virginia CZM on Virginia's seaside.

Priorities

The Virginia CZM program funds the implementation of the VA Healthy Waters Program in concert with CZM support for the Network for Education of Municipal Officials (VA NEMO). VA NEMO provides education, technical assistance and financial coordination assistance to increase the capacity of local governments and watershed organizations to implement sound land use planning and watershed protection.

Measures of Success

The Virginia CZM program has funded multiple projects through regional government partners to provide technical assistance to local governments in their efforts to improve water quality and comply with the Chesapeake Bay TMDL. In 2011, both Hampton Roads and Middle Peninsula Planning District Commissions launched a CZM initiative to advance water quality improvements in coastal Virginia. The Hampton Roads Planning District Commission (HRPDC), facilitated a recent project resulting in two initiatives: 1) Redevelopment as a Nutrient Reduction Strategy addressing regulatory requirements; and 2) Reducing Nutrients on Private Property: Evaluation of Programs, Practices, and Incentives addressing voluntary approaches. Both reports have been endorsed by HRPDC in 2012 and distributed to Hampton Roads localities for implementation.

C.2 WATERSHED PLANNING PROGRAMS

C.2.1 - Water Supply Planning

Program Description and Goals

Withdrawal Permitting

The Office of Water Supply (OWS) oversees the allocation of water resources through permitting surface and groundwater withdrawals. Surface water withdrawals are authorized under Virginia Water Protection Permits, which is administered by the Office of Wetland and Streams Protection with the Office of Water Supply serving as lead for these types of projects. Groundwater withdrawals are authorized under the Ground Water Management Act of 1992 and are regulated through the Ground Water Withdrawal Regulations.

Water Supply Planning Program

The Water Supply Planning Program works with all counties, cities and towns in the Commonwealth to prepare and update local or regional water supply plans, which are used in the development and update of the State Water Resources Plan. Objectives for this planning process are to:

1. Ensure that adequate and safe drinking water is available to all citizens of the Commonwealth.
2. Encourage, promote, and protect all other beneficial uses of the Commonwealth's water resources.
3. Encourage, promote, and develop incentives for alternative water sources, including, but not limited to desalinization.

Ground Water Characterization

The Ground Water Characterization Program collects, evaluates and interprets technical information necessary to manage the Commonwealth's ground water resources. The staff works to ensure that the information necessary to support resource management decisions and water supply planning activities, assess ground water availability, facilitate drought monitoring, and support the expansion or creation of ground water management areas is available.

Goal: Allocation of water resources to provide for sustainable long term use of the resource with minimal adverse impacts on existing beneficial uses.

The review of surface water withdrawal applications includes an in-depth review of the applicant's water demand and a cumulative impact analysis to evaluate the potential adverse impact on the existing beneficial uses. Once determined, the analysis can then be used to consider alternatives to minimize any adverse impacts.

Permitting activities related to groundwater occur when a request to withdrawal greater than 300,000 gallons per month or more occur in designated Groundwater Management Areas located in the Coastal Plain Physiographic Province. The application process includes review of beneficial use, justification for requested withdrawal volume, hydrogeologic information and requires inclusions of water conservation and management plans along with mitigation plans and monitoring when applicable.

Coordination and Partnerships

Water supply plans were developed and adopted by all local governments in the Commonwealth, often working with the planning district commissions and local stakeholder groups.

The review of applications for surface water withdrawals are closely coordinated with the U.S. Army Corps of Engineers, Virginia Marine Resources Commission, Virginia Department of Health, Virginia Department of Game and Inland Fisheries, and Virginia Department of Conservation and Recreation.

Groundwater characterization and permitting activities are coordinated with the U.S. Geological Survey, Virginia Department of Health, the Virginia State Water Commission, the Waterworks Advisory Committee and the Groundwater Protection Steering Committee.

Initiatives and Implementation

Cumulative Impact Analysis of Proposed Surface Water Withdrawals

In support of a state-wide water supply plan, the VWP permit regulation (See the 9VAC25-210) requires the evaluation of cumulative effects (Cumulative Impact Analysis) during the review of permit applications for surface water withdrawals. DEQ staff has developed and maintained an operational model covering all streams and impoundments in the Commonwealth for the purpose of performing Cumulative Impacts Analysis. Each new or renewing VWP permit is analyzed within the modeling system for its potential to impact downstream beneficial uses, and for its susceptibility to impacts from other water users located upstream. Staff analysts use the output of these models to arrive at a set of operational rules that minimize impacts on all beneficial uses.

Priorities

Southeastern Aquatic Conservation Priority Areas

Rationale and Integration: Limited financial and expert resources need to be utilized where they will best meet the needs of regional aquatic resource managers. By identifying priority areas for conservation, Virginia can focus work on in stream flows to where it will be utilized and most productive.

Resource Description:



The Nature Conservancy (TNC) Aquatic Conservation Priority Areas

Maps of priority conservation areas were obtained for Department of the Interior and the U.S. Forest Service protected lands, state wildlife action plans, the Southeast Aquatic Resources Partnership (SARP) regional threat assessment maps, TNC ecoregional portfolios (see map above), and other sources. Conservation status was assigned to National Hydrography Dataset river segments.

Information about viewing the aquatic conservation area maps and accessing data from SARP is given at http://sifn.bse.vt.edu/sifnwiki/index.php/Main_Page#Maps_and_Data_Access.

The Aquatic Conservation Area report to the SALCC documents attempts to designate a single set of priority areas from these resources (see link below). Due to inconsistencies in the objectives and methods used to designate priority areas among states and other groups, the effort was not successful for the SALCC. Learning from this experience, a different approach will be taken for the GCPLCC project area. Methodologies to prioritize aquatic conservation areas will be reviewed and the most appropriate applied to LA, TX, and OK.

Related Resources

- [Priority Aquatic Conservation Area - Expert Review Process](#) - Track issues and decisions made by the SIFN Aquatic Conservation Area Committees for the GCPLCC
- Aquatic Conservation Areas - Report to the SALCC [File:SALCC Aquatic Conservation Priorities.pdf](#)

This project was funded by the SALCC and GCPLCC.

Measures of Success

The State Water Resources Plan is currently under development. This Plan will provide an inventory of the state's surface and groundwater resources and a summary of the types and amounts of uses. It will also provide a better understanding of locality and regional water needs and how water deficits will be addressed.

C.2.2 - Source Water Protection in the Commonwealth

Program Description

Source Water Protection Program – The Virginia Department of Health (VDH) is the lead agency for ensuring compliance with the Safe Drinking Water Act (SDWA) in Virginia. The Office of Drinking Water (ODW) is the designated office within VDH tasked with implementing the SDWA. Source Water Assessments (SWAs) are completed, as needed, for newly permitted sources of drinking water. In addition, VDH-ODW administers a voluntary program under the Drinking Water State Revolving Fund (DWSRF). As a part of the DWSRF, funds are utilized to enhance the ability of waterworks owners to guarantee long-term capacity to produce safe drinking water and to protect source waters. These funds provide for a non-regulatory incentive to waterworks to provide either Wellhead Protection Programs for groundwater source systems, or Source Water Protection Plans for surface water based systems. Waterworks owners who borrow money from the DWSRF use it to protect their drinking water sources through land acquisition or conservation easements in order to ensure compliance with the SDWA, and to support incentive based voluntary protection measures. VDH-ODW maintains contracts to provide direct technical assistance at no cost to waterworks for development of Wellhead Protection and Source Water Protection Plans.

Goals, Objectives, and Strategies

Source Water Protection Program – The Source Water Protection objectives are established by the Environmental Protection Agency (EPA) through the SP-4 goal. Currently, the goals are set by region. In 2013, the established goals for Virginia were 55% population protected by waterworks with a substantially implemented protection plan and 16% of community water systems protected. These goals were met or exceeded at 55% and 20%, respectively.

The Source Water Protection strategy will continue to focus on education, empowering, and financing initiatives through its various program and partnerships. One such partnership is through a Memorandum of Understanding (MOU) between VDH and the Department of Environmental Quality (DEQ) for wellhead protection. A Request for Proposals is issued by DEQ, which grants funds to waterworks that provide proposals for implementing certain aspects of their wellhead protection plans. The funding for this activity comes from the DWSRF.

Coordination and partnerships

Source Water Protection Program – These programs report to and coordinate with the EPA (Region III) Source Water and Capacity Development workgroups. They can and have supported other states efforts for Source Water Protection (SWP). VDH-ODW is an active member of the Interstate Commission on the Potomac River Basin, and agency programs also support the goals and strategies of the Chesapeake Bay Preservation Act, which impacts multiple Mid-Atlantic States. VDH will work with DEQ on plan implementation, and a representative of VDH-ODW serves on DEQ's Groundwater Protection Steering Committee. The staff working on source water protection

also handles the State Environmental Review Process (SERP), a NEPA-like environmental review which includes the Secretariats of Natural Resources and Transportation. Although VDH is not a signatory party to the SERP, the SWP staff does respond to all requests for comment on SERP projects. VDH-ODW is also involved in many technical advisory committees, as needed, with any state agencies requesting assistance. Most waterworks that are provided technical assistance are local governmental agencies. VDH-ODW will also work closely with Soil and Water Conservation Districts to obtain and incorporate relevant information into agency plans. Finally, VDH-ODW will work with private sector consulting firms contracted to conduct the SWP Plans, private firms that operate community water systems, and recently have reached out to several watershed groups to engage citizens. This effort will continue as VDH-ODW attempts to educate and encourage awareness in source water protection.

Programs include state level initiatives and on the ground implementation.

Source Water Protection Program – VDH-ODW is planning on starting a statewide well abandonment program in the near future.

Measures of success

Source Water Protection Program – Success has historically been measured as actual performance versus the goals and objectives set by EPA (SP-4 Goals). VDH-ODW does not conduct environmental water quality testing. The majority of water quality sampling that does occur in the program is on water that has been treated under the supervision of the Virginia Waterworks Regulations.

C.2.3 - Total Maximum Daily Loads and Water Quality Management Planning

Program Description and Goals

DEQ has developed lists of impaired waters in every even year since 1992. This [impaired waters list](#) individually describes segments of streams, lakes, and estuaries that exhibit violations of water quality standards. The report details the pollutant responsible for the violations, and the suspected cause and source of the pollutant. Since 1998, DEQ has developed plans, with public input, to restore and maintain the water quality for the impaired waters. These plans are called "**Total Maximum Daily Loads**," or TMDLs. *TMDL* is a term that represents the total pollutant a water body can assimilate and still meet standards. Section 303(d) of the Clean Water Act and the EPA's Water Quality Planning and Management Regulation (40 CFR Part 130) require states to develop Total Maximum Daily Loads (TMDLs) for water bodies that are exceeding water quality standards. Section 303(d) of the Clean Water Act and the EPA's Water Quality Planning and Management Regulation (40 CFR Part 130) require states to develop Total Maximum Daily Loads (TMDLs) for water bodies that are exceeding water quality standards.

Section 303(e) of the Clean Water Act (CWA), and the Environmental Protection Agency's (EPA) implementing regulations at 40 CFR • 130.5 require that states have a continuing planning process (CPP) for all navigable waters. Among other things, plans are to include effluent limits and incorporation of total maximum daily loads (TMDL) for pollutants, schedules for compliance with effluent limits, provisions for

intergovernmental cooperation, and adequate assurance for implementation, including schedules of compliance.

Virginia's Continuing Planning Process (CPP) explains the processes the State uses to administer its water programs and to develop plans to improve, protect and maintain the quality of the Commonwealth's waters. Virginia DEQ programs, which implement the key aspects of the CPP include the following:

- [Water Quality Standards and Amendments to the Water Quality Standards Regulation](#)
- [Water Quality and Biological Monitoring](#)
- [Water Quality Assessments](#)
- [Total Maximum Daily Loads](#)
- [Clean Water Financing and Assistance](#)
- Water Permits & Water Quality Management Plans
- VPDES (Wastewater) Permitting and Compliance
- [Enforcement](#)

Many steps in the CPP process adhere to the State Water Control Board's [public participation guidelines](#).

Water Quality Management Planning Regulation

The Water Quality Management Planning Regulation (WQMPR) presents numeric limits and loads as set through the CPP. Information in the WQMPR is presented in more detail through water permits, water quality monitoring data, and TMDL reports.

The WQMPR lists by major river basin the following: EPA-approved and board-adopted total maximum daily loads (TMDLs) and the stream segment classifications, effluent limitations including water quality based effluent limitations, and waste load allocations contained in water quality management plans (WQMPs). The regulation is [9 VAC 25-720](#). The major river basins include:

- Shenandoah-Potomac
- Rappahannock
- Eastern Shore, Coastal Rivers, Chesapeake Bay
- York
- James
- Roanoke
- New
- Tennessee – Big Sandy
- Chowan & Dismal Swamp

Each section pertaining to a major river basin is divided into the following parts:

- Part A. Overall Waste Load Allocations for Non-Bacterial TMDL
- Part B. Stream segment classifications, effluent limitations and waste load allocations by permittee.
- Part C. Nitrogen and Phosphorus Wasteload Allocations to Restore the Chesapeake Bay and its Tidal Rivers

Authority to enact the Water Quality Management Planning Regulation is given by [62.1-44.15\(10\) & \(13\)](#) of the Code of Virginia.

Virginia's TMDL Program goal is that all streams attain the appropriate beneficial uses. These beneficial uses are described by the following use goals:

- drinking water use
- primary contact/swimming use
- fishing use
- shell fishing use
- aquatic life use

These uses are protected by application of the state's numeric and narrative water quality criteria. When the beneficial uses are not being met, the state addresses the impairment and, if found to be necessary, ensure that water quality is restored. One very important step in restoring water quality in the impaired streams is the development of TMDLs.

Virginia's annual goal is to develop 50 TMDL equations. This means that Virginia annually addresses 50 to 75 impaired segments via the TMDL process. Beginning in 2016, Virginia plans to implement the nationwide 303(d) vision and goals to include alternate watershed clean-up methodologies, such as restoration without a TMDL.

The nationwide *Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program* provides the following timeline for revised goals:

Timeline for Goal Statements

2014 – Engagement

2016 – Prioritization, Protection, Integration

2018 – Alternatives

2020 – Assessment (Site-specific)

2022 – Evaluate accomplishments of the Vision and Goals

Coordination and Partnerships

The Virginia TMDL program coordinates with a variety of public and private stakeholders in an open process. The characteristics of the watershed (e.g. beneficial use goal, land use, and pollution sources) dictate which partners are highly involved in the TMDL process. In general, partner programs and agencies may include the following:

- The Virginia Department of Health
- The Virginia Department of Environmental Quality – Virginia Stormwater Management Program, Virginia Discharge Elimination System Permit Program, Division of Enforcement, Clean Water Financing Program, Water Quality Standards, Water Quality Monitoring and Assessment
- The Virginia Department of Conservation and Recreation, including the Soil and Water Conservation Districts
- Local Governments
- Planning District Commissions
- Trade Groups

Initiatives and Implementation

Implementation of TMDLs is required by the Code of Virginia. The description of Virginia's TMDL Implementation process is described separately. To meet the 1999 Consent Decree (CD) that resulted from a settlement by EPA with plaintiffs regarding enforcement of the TMDL provisions of the Clean Water Act, Virginia completed TMDLs covering approximately 225 shellfish and 375 non-shellfish CD listed

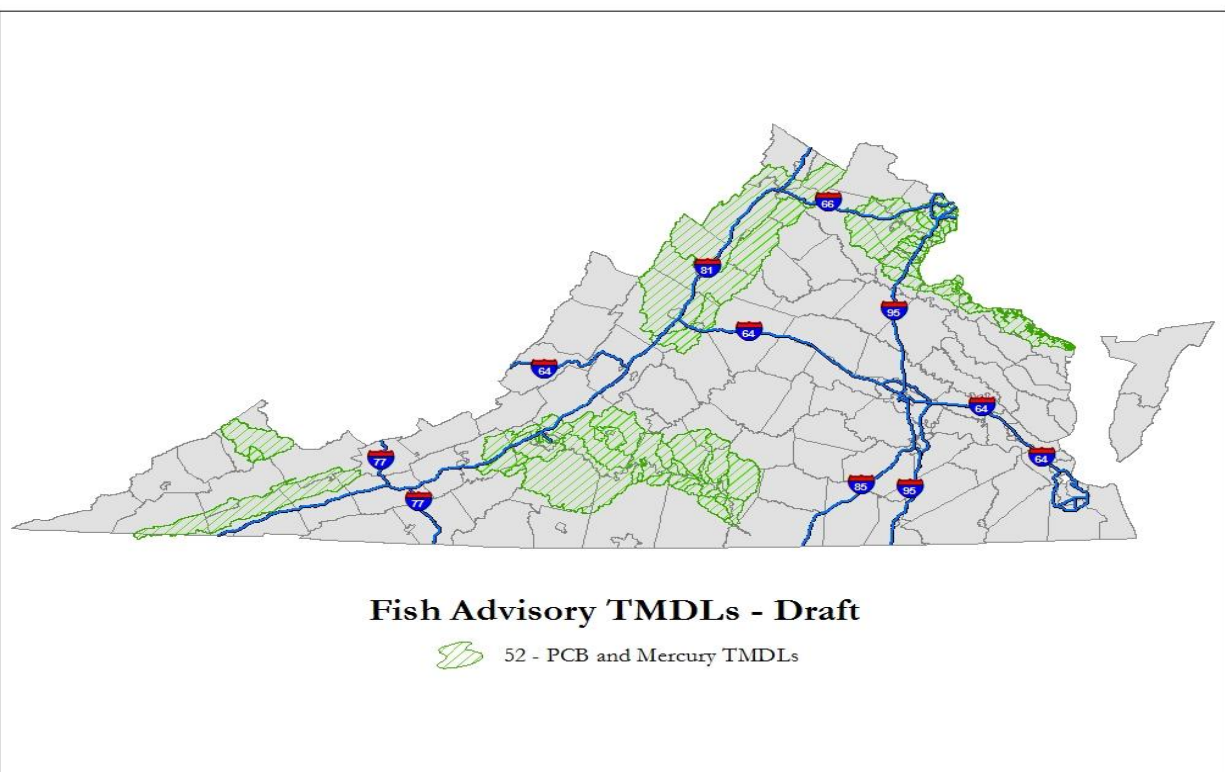
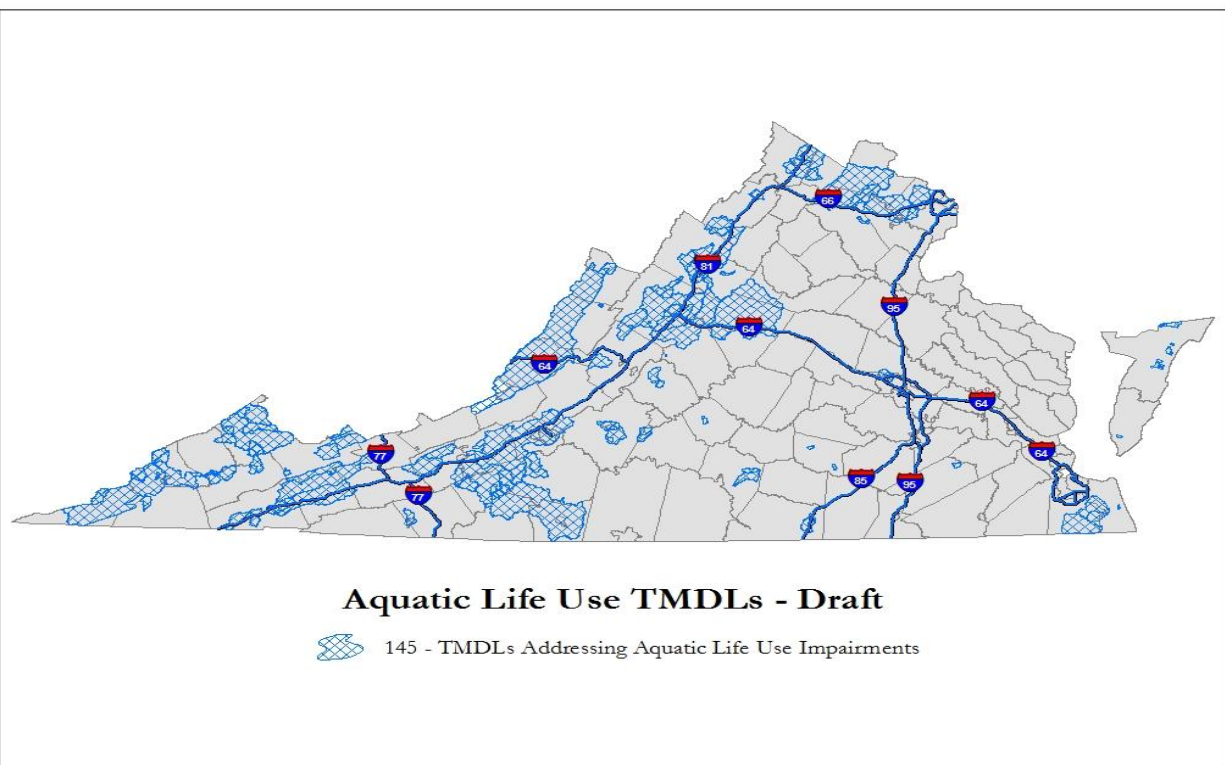
impairments, and approximately 198 non-CD listed impairments. Virginia has received credit under the CD for an additional 145 delisted or re-categorized impairments. Since completing the requirements of the 1999 CD in 2010, Virginia has continued to develop approximately 50 TMDLs per federal fiscal year in accordance with a TMDL Development pace agreement with EPA. Virginia currently develops TMDLs using a “watershed approach” when possible. The watershed approach to TMDL development allows watersheds with similar characteristics to be combined under a single TMDL equation resulting in cost and time efficiencies. Virginia has also established a structure to batch TMDLs and Implementation Plans for even greater efficiency. Watersheds are prioritized for TMDL development based on risk, public interest, available monitoring, regional input, and available funding. TMDL development schedules are developed about every two years, and posted on Virginia’s [TMDL website](#).

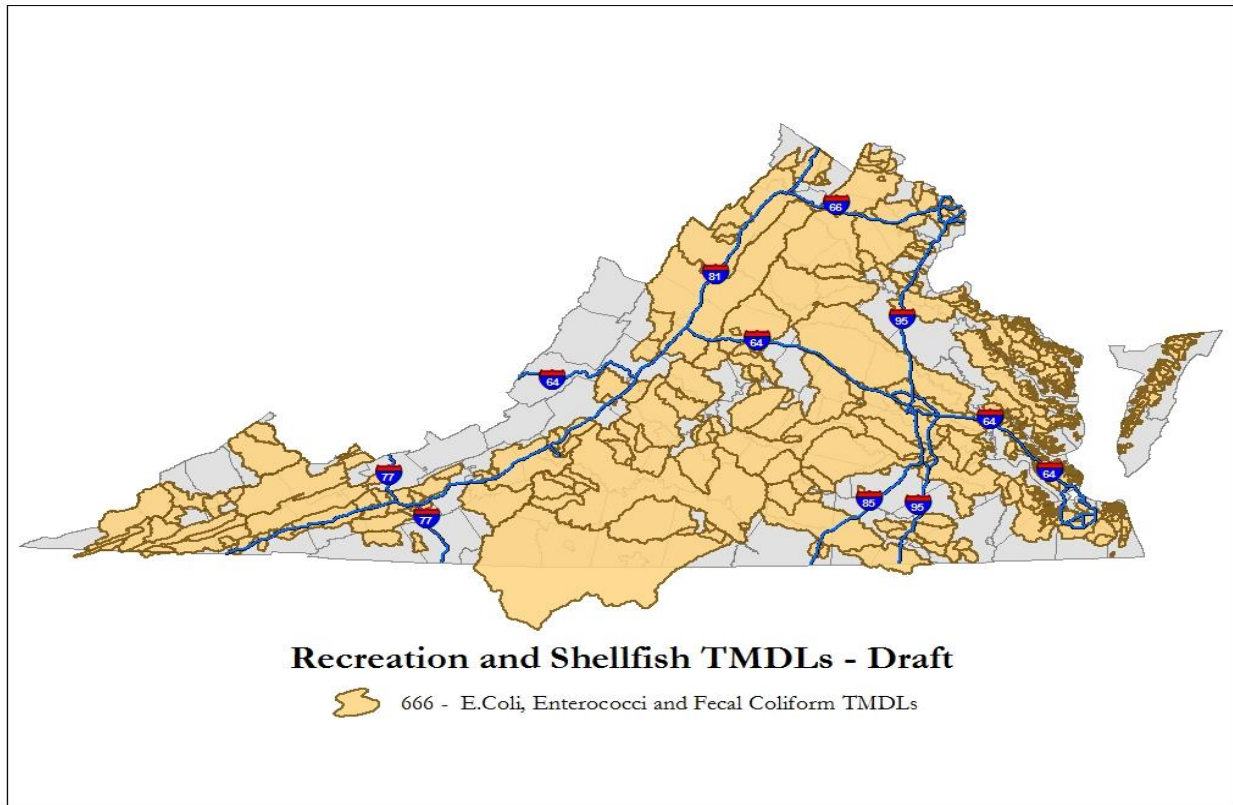
1999 - 2014 TMDL Development Status

Year	1999 - 2010 CD TMDL	1999 - 2010 Non- CD TMDL	Post CD TMDL Schedule	Totals
2000	11	0		11
2002	24	0		24
2004	91	8		99
2006	170	36		206
2008	132	82		214
2010	172	72		244
2012			111	111
2013			31	31
2014			21 ⁱ	21
Totals	600	198	111	963

ⁱ VADEQ has submitted additional TMDLs that are awaiting TMDL approval. The 2014 value reflects the TMDL status as of June 1, 2014.

The following three maps depict watersheds where TMDL have been developed that address aquatic life, fish advisories, and bacteria impairments:





Priorities

Currently, watershed prioritization is triggered by the list date of the impairment. Once listed, Virginia generally aims to address the impairment via the TMDL process in 8 to 12 years. By 2016, the Virginia TMDL program will have revised and presented 303(3) watershed prioritization goals to EPA.

Measures of Success

Currently, Virginia measures success by quantifying the number of TMDLs developed annually and cumulatively. The latest 303(d)/305(b) Integrated Report demonstrates success measures in the form of delisted impairments and improving water quality trends.

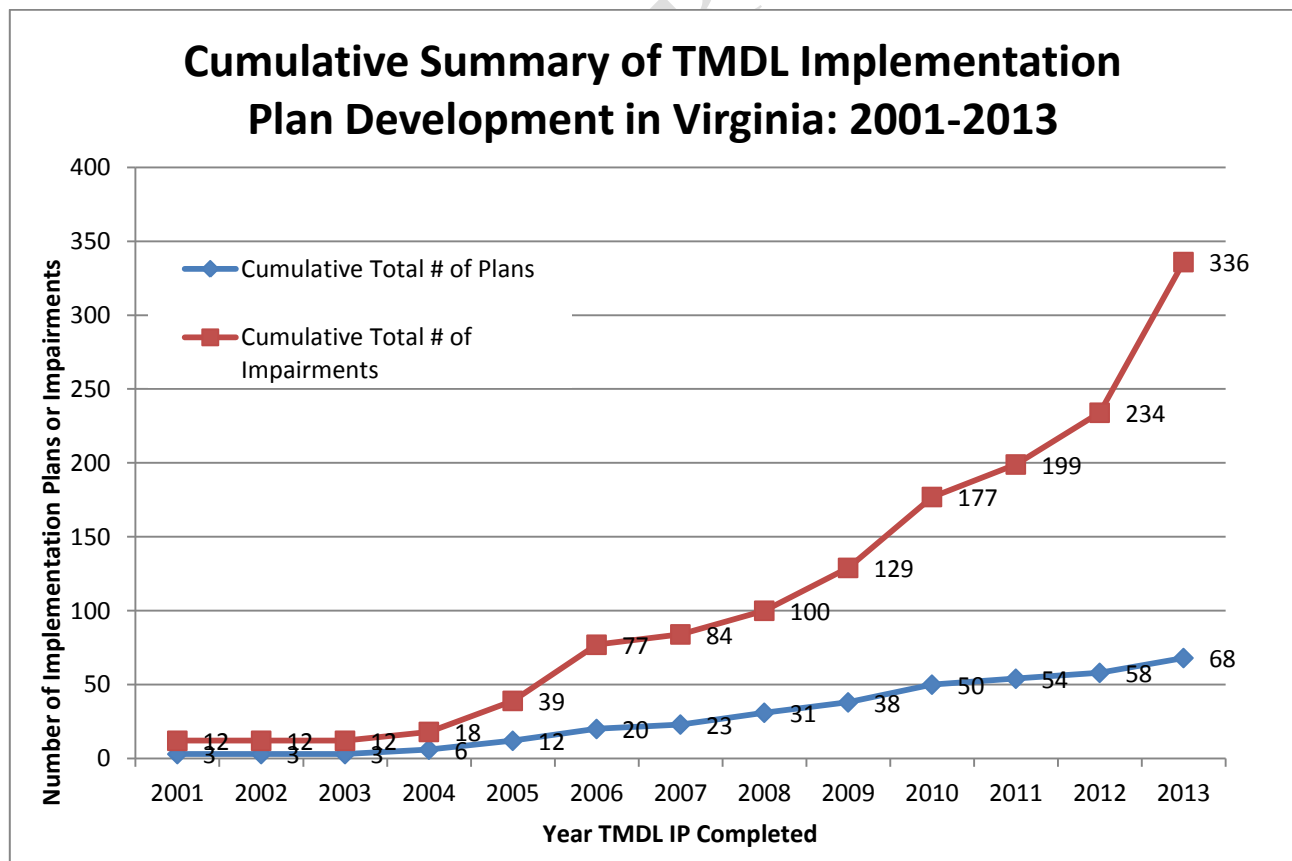
C.2.4 - Total Maximum Daily Load Planning and Watershed Implementation

Program Description and Goals of TMDL Implementation Plan Program

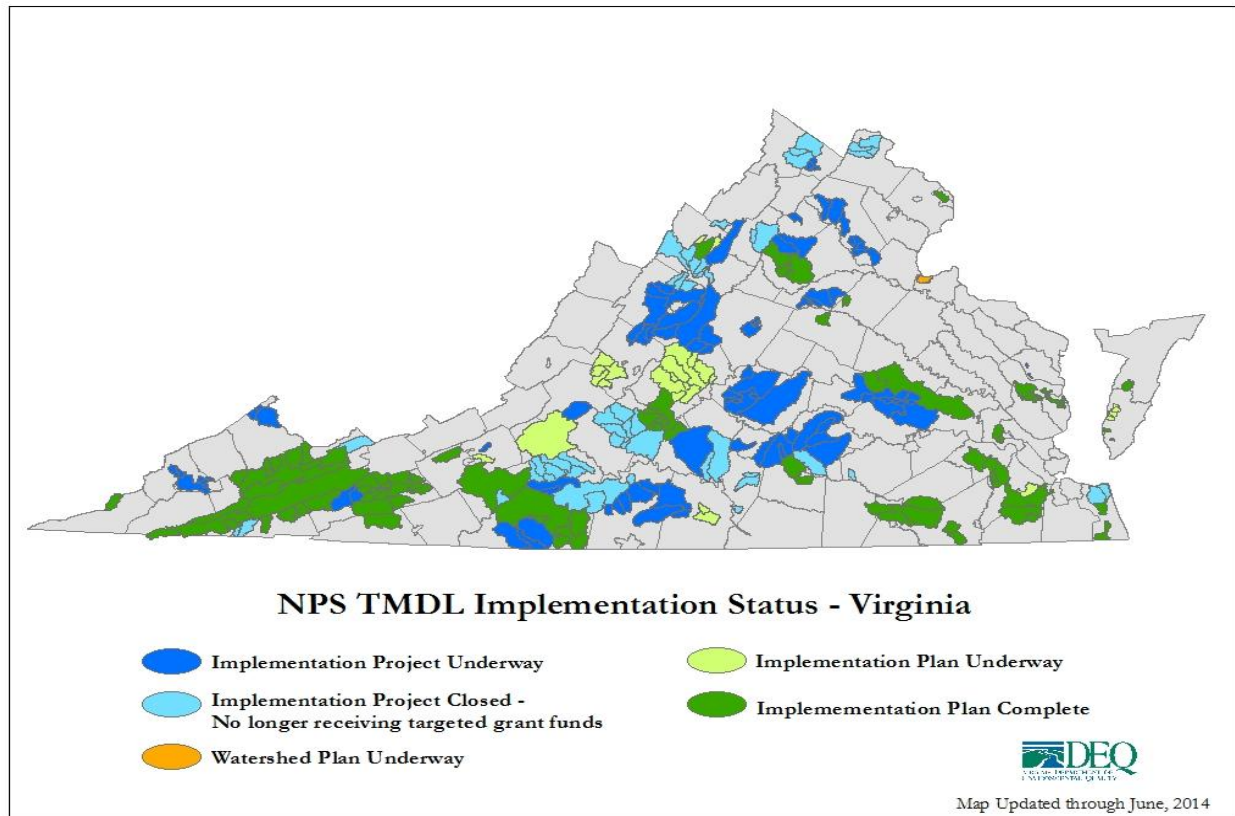
Section 303(d) of the Clean Water Act and the EPA's Water Quality Planning and Management Regulation (40 CFR Part 130) require states to develop Total Maximum Daily Loads (TMDLs) for water bodies that are exceeding water quality standards. The Commonwealth achieves this goal by means of a three-phase process: TMDL development, development of TMDL IPs and/or permit conditions, and implementation of permit conditions and/or best management practices. Once the TMDL has been developed, a TMDL report is prepared and distributed for public comment and then submitted to EPA for approval. Following this process,

a TMDL Implementation Plan (IP) or watershed based plan (WBP) should be developed to describe actions (i.e., best management practices) to implement the allocations contained in the TMDL. In most cases, the wasteload allocations (WLAs) would be addressed through the Virginia Pollutant Discharge Elimination System (VPDES) Program administered by the Virginia Department of Environmental Quality. The load allocations (LA) would be addressed by the IP or WBP. The development of IPs are required by Virginia's 1997 Water Quality Monitoring, Information, and Restoration Act (§62.1-44.19:4 through 19:8 of the Code of Virginia), or WQMIRA. TMDL reports, implementation plans and implementation progress updates are available on the [DEQ TMDL website](#).

An implementation plan describes the measures that must be taken to reduce pollution levels in the stream and includes a schedule of actions, costs, and a monitoring plan. DEQ along with other agency and non-agency partners, continued to develop TMDL implementation plans and watershed based plans and to execute these plans throughout Virginia. There is not a mandated schedule for implementation plan development; however, local or state agencies, as well as community watershed groups, can take the lead in developing TMDL implementation plans. A single plan may address multiple impairments. As of December 2013, Virginia has completed 70 IPs, addressing 345 impairments. The goal through 2018 is to complete 5 new implementation plans every year that collectively address 10 impairments. This result in an estimated 100 plans completed addressing 390 impairments. In the majority of cases, watersheds that have a completed implementation plan also have TMDL implementation projects underway. The following figure illustrates the cumulative summary of TMDL Implementation Plan development in Virginia from 2001 thru 2013.



The following figure shows the location of TMDL implementation plan development and implementation in Virginia since 2001. A summary of completed TMDL implementation plans is provided in Appendix 1.



In order achieve consistent implementation planning; Virginia is undertaking the update of its 2002 TMDL Implementation Plan Manual, with an estimated completion date of December 31, 2015. Virginia also commits to develop an annual prioritized list of plans to be developed by the end of the previous calendar year.

Program Description

The goal of the [TMDL Implementation Program](#) is to implement targeted, on-the-ground activities (e.g. best management practices, or BMPs), identified in TMDL IPs, which will result in water quality improvements, achieve attainment of water quality standards and the subsequent delisting of impaired streams. Virginia uses a staged approach that provides opportunities for periodic evaluation of the effectiveness of the implementation actions and adjustment of efforts to achieve water quality objectives in a timely and cost-effective manner. Implementation project often involve a wide selection of stakeholders or involved agencies and organizations working on a common purpose to engage the general public in behavior change or BMP implementation to improve water quality conditions. To gage progress toward this goal, DEQ tracks Best Management Practice (BMP) installations and continues to monitor water quality in the impaired watersheds.

Virginia began with three implementation projects in 2001 and as of June 2014 Virginia has approximately 30 active implementation projects that receive a mix of federal and state funds to implement actions. On average implementation projects receive funding for four to five years, but some have been funded for as little of 2 years and others for as long as 10 years. Since 2001 Virginia has provided funding for 48 implementation projects; 18 of which have ended sometime between 2001 and 2014.

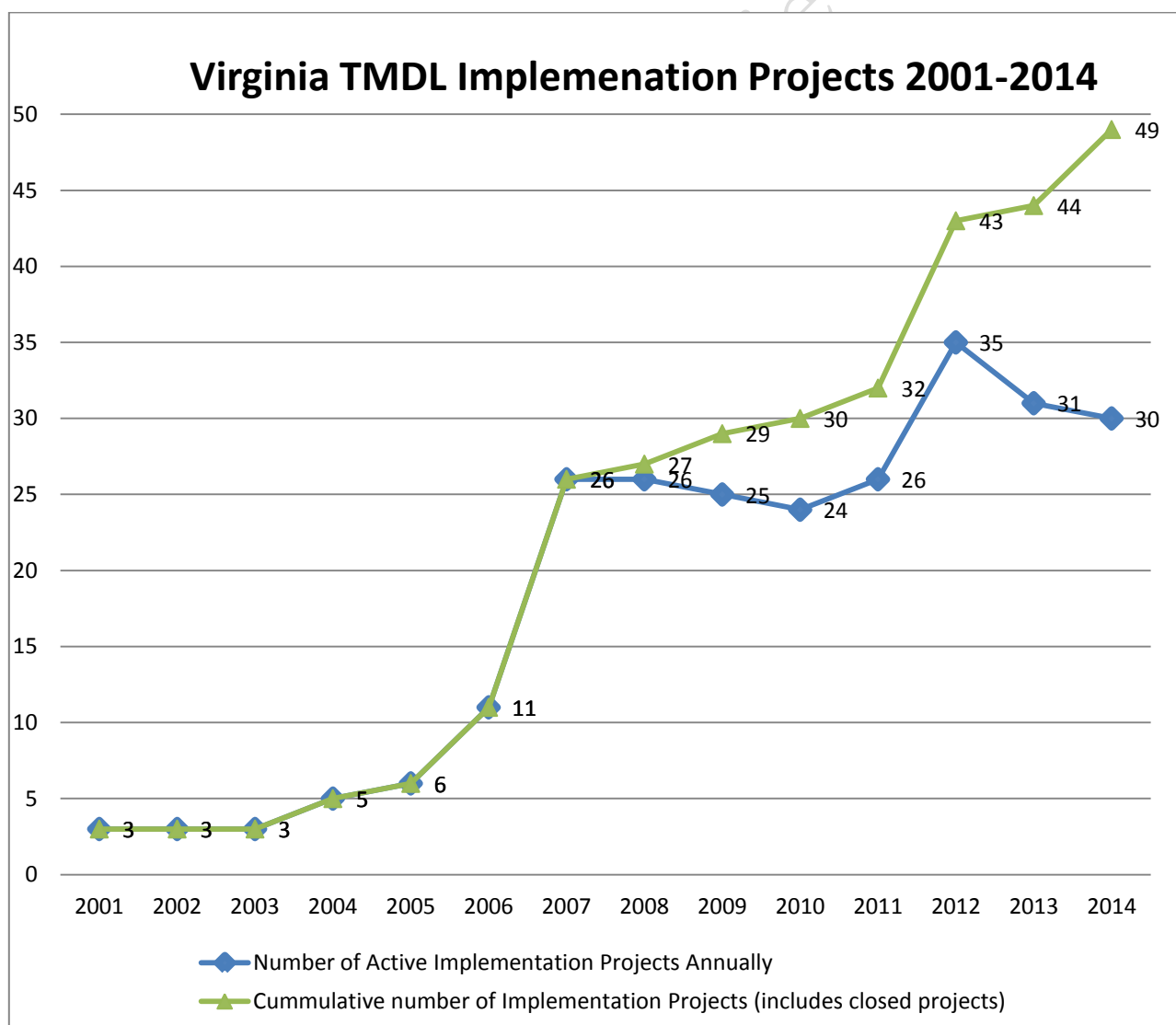
Goals of TMDL Implementation Program

- Address Water Quality Impairments through evaluation of pollutant loadings and land uses and prescribing reductions.
- Maintain full engagement of stakeholders during this process.
- Continue current pace of TMDL development, developing 100 TMDL equations per 2-year period, while allowing for exploration of non-TMDL.
- Under the 2013 303(d) Vision, this milestone will evolve into a goal of meeting a portion of impairments by unit area rather than developing a set number of TMDL equations.
- Develop annual prioritized list of TMDLS to be developed by end of calendar year.
- Review and update Implementation Plan Development Manual by 12/31/2015.
- Develop prioritized list of TMDL Implementation Plans (IPs) to be developed by end of calendar year.
- Update DEQ TMDL BMP Cost-share Guidelines by June of every year
- Establish Petwaste BMP Cost-share Specifications and standards by 12/31/2015
- Establish BMP Cost-share Specifications and standards for residential lands by 12/31/2015
- Develop TMDL Implementation Project Monitoring Strategy by 12/31/2014.
- Develop TMDL Implementation Project Monitoring Plan by October of every year.
- Enhance DEQ's Comprehensive Environmental Data System (CEDS) to include Implementation Plan Spatial Data into existing DEQ Datasets.
- Develop database and all features by 6/30/2016 (TMDL Implementation Plan and Implementation Project modules of DEQ's CEDS database).
- BMP Tracking: 1) Development of Specifications for DEQ Nonpoint Source BMP Database and 2) Implement a BMP Spot Check Program. Develop database and all features by 6/30/2016.
- Develop one success story (Type I) a year addressing delisting for water body that was restored. This will meet EPA requirement "Number of water bodies identified in VA's 1998/2000 Integrated Report (IR) or subsequent years as being primarily NPS impaired that are partially or fully-restored (WQ-10): Identify Partially or fully restored water bodies in Appendix C of state's IR primarily impaired by NPS pollutants in 1999 court ordered 303(d) list or 1998/2000 IR".
- Develop two success stories (Type II) a year addressing water quality improvements for a water body. This will meet EPA requirement "Number of water bodies identified in VA's 1998/2000 IR or subsequent years as being primarily NPS impaired that show water quality improvements (WQ-10): Identify water bodies in Appendix C of state's IR primarily impaired by NPS pollutants in 1999 court ordered 303(d) list or 1998/2000 IR or later that demonstrate a significant trend of improved water quality"
- Estimated annual reductions in pounds of nitrogen from NPS water bodies (from Section 319 funded projects) (WQ-9a): Annually review information from DCR, DMME, USDA, watershed coordinators, NPS staff and stakeholders, and TMDL Implementation projects for NPS load reductions of nitrogen; and include information in NPS annual report. Targeted based upon annual average of 2010-2013 GRTS.
- Estimated annual reductions in pounds of phosphorus from NPS water bodies (from Section 319 funded projects) (WQ-9b): Annually review information from DCR, DMME, USDA, watershed

coordinators, NPS staff and stakeholders, and TMDL Implementation projects for NPS load reductions of Phosphorous and include information in NPS annual report. Targeted based upon annual average of 2010-2013 GRTS.

- Estimated annual reductions in tons of Sediment from NPS Water Bodies (from Section 319 funded projects) (WQ-9c): Annually review information from DCR, DMME, USDA, watershed coordinators, NPS staff and stakeholders, and TMDL Implementation projects for NPS load reductions of Sediment and include information in NPS annual report. Targeted based upon Annual average of 2010-2013 GRTS.
- Estimated annual reductions in CFU of Bacteria from NPS Water Bodies (from Section 319 funded projects): Annually review information from DCR, DMME, USDA, watershed coordinators, NPS staff and stakeholders, and TMDL Implementation projects for NPS load reductions of Bacteria and include information in NPS annual report. Targeted based upon annual average of 2010-2013 GRTS.

Collectively, since 2001, Virginia has funded 48 NPS TMDL Implementation Projects. Over time 19 of those projects have closed and no longer received targeted TMDL programs. In 2014 Virginia had 30 active NPS TMDL Implementation projects that were receiving targeted TMDL implementation funding from either Federal 319(h) or State agricultural cost-share funds, or a combination of both.

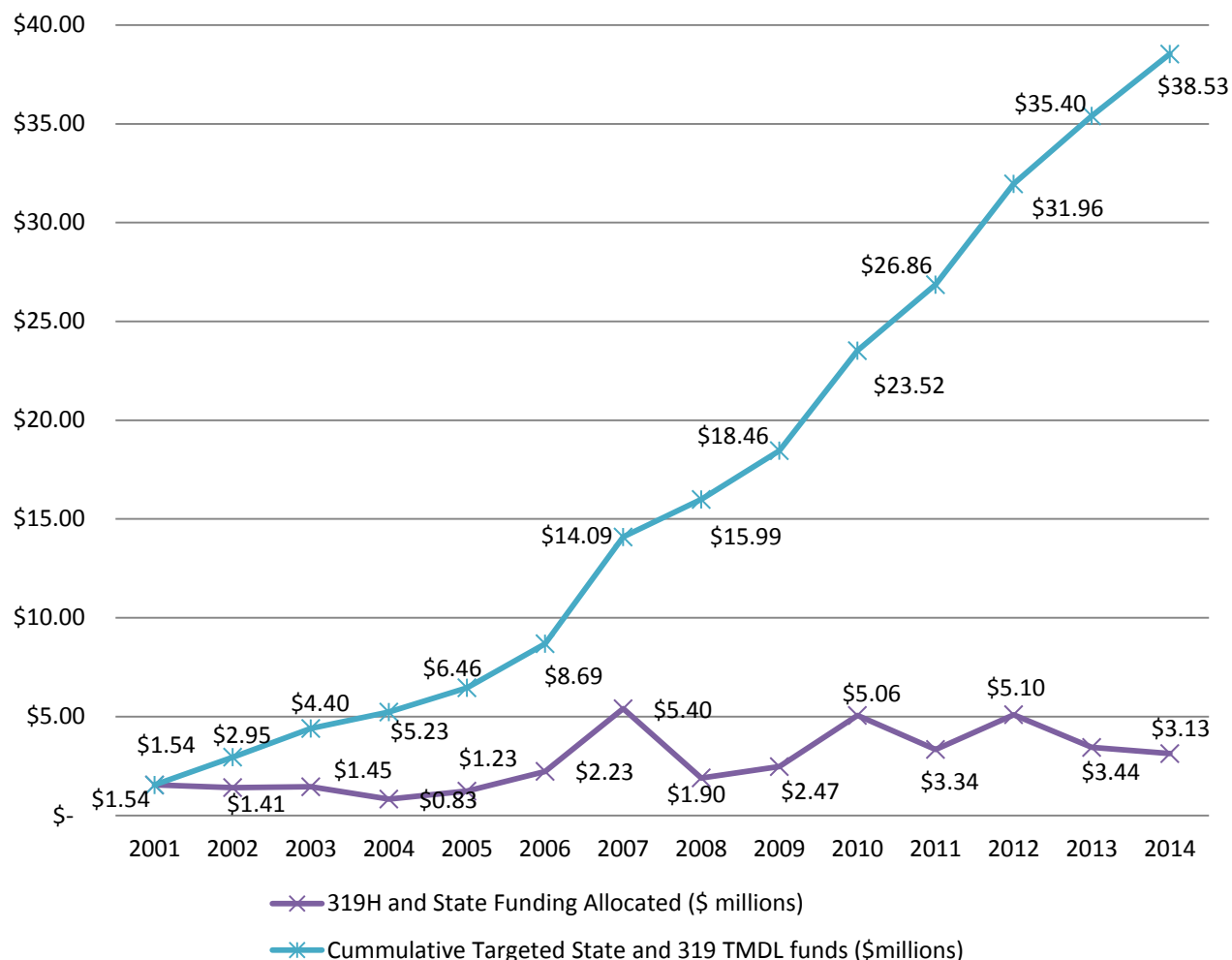


Virginia will strive to be able to support between 15 and 20 implementation projects annually; however is is wholly dependent on state and federal resources for BMP installation. Part of this will be accomplished by developing a prioritized list of Implementation projects every year and conduct competitive solicitations for new implementation projects for approved TMDL implementation plans, in the form of either a Request for Proposal (RFP) or Request for Applications (RFA). The TMDL Implementation Program also will strive to have consistently implemented BMPs that result in water quality improvements. To this end, DEQ will annually update its [TMDL BMP Cost-share Guidelines](#) by June of every year. These guidelines provide the framework by which project partners implement BMPS associated with TMDL Implementation projects using Section 319(h) funds. DEQ will also strive to develop new BMP specifications and standards for BMPs that are included in TMDL IPs.

Funding for TMDL implementation has fluctuated over the year, Targeted TMDL implementation funding from Section 319(h) and DCR's Virginia Natural Resources Commitment Fund (VNRFCF) have collectively provided nearly \$39 million in implementation funding (nearly 90% of that going to BMP installation) from 2001 through 2013. Section 319(h) funds average \$1.5 million per year and VNRFCF has average \$1.5 million per year.

Collectively, since 2001, Virginia has funded spent \$38.53 million in targeted TMDL funding, from a combination of Federal 319(h) and State VNRFCF. These amounts do not include funds spent in TMDL project areas from general DCR Virginia Agricultural Cost-share Funds or from other sources of funding (EPA, National Fish and Wildlife Foundation, etc.). On average Virginia receives approximately \$2-2.5 million in targeted implementation funds.

Virginia TMDL Implementation Project Funding 2001-2014



Coordination and Partnerships

The Virginia TMDL IP program coordinates with a variety of public and private stakeholders in an open process. The characteristics of the watershed (e.g. beneficial use goal, land use, and pollution sources) dictate which partners are highly involved in the TMDL process. In general, partner programs and agencies may include the following:

- The Virginia Department of Health
- The Virginia Department of Environmental Quality – Virginia Stormwater Management Program, Virginia Discharge Elimination System Permit Program, Division of Enforcement, Clean Water Financing Program, Water Quality Standards, Water Quality Monitoring and Assessment
- The Virginia Department of Conservation and Recreation, including the Soil and Water Conservation Districts
- Local Governments
- Planning District Commissions
- Trade Groups

- USDA – Natural Resource Conservation Service

Initiatives and Implementation

Upon completion of [TMDL Implementation Plans](#), watershed areas may be eligible to receive funding to complete comprehensive, multi-year TMDL implementation projects. The purpose of the projects is to implement on-the-ground activities or Best Management Practices, BMPs, in order to improve water quality and meet water quality standards. The goal of these projects, through restoration and protection efforts, is to meet water quality standards and associated [TMDLs](#). Projects for implementation funding are selected on a competitive basis through a public project proposal solicitation process.

Priorities

Implementation priorities are established through the nonpoint source assessment and an annual planning process.

Measures of Success

Annually Virginia provides a summary of TMDL Implementation accomplishments funded through the 319 program

- [2013 TMDL Implementation Supplement to the Virginia Nonpoint Source Program Annual Report](#) (PDF) - Published by DEQ
- [2012 TMDL Implementation Supplement to the Virginia Nonpoint Source Program Annual Report](#) (PDF) - Published by DCR
- [2011 TMDL Implementation Supplement to the Virginia Nonpoint Source Program Annual Report](#) (PDF) - Published by DCR
- [2010 TMDL Implementation Supplement to the Virginia Nonpoint Source Program Annual Report](#) (PDF) - Published by DCR
- [2009 TMDL supplement to the Chesapeake Bay VA Waters Cleanup Plan Report and Nonpoint Source Annual Report](#) (PDF) - Published by DCR

Success of Virginia's TMDL Implementation Program can also be shown through the number of project areas that have shown improving water quality conditions or have been delisted from Virginia's [303\(d\) list](#) of impaired waters. A number of these project areas have been accepted [National NPS Success Stories](#) by EPA. Through [Section 319 Nonpoint Source Success Stories](#), EPA tracks the progress of partially or fully restoring waterbodies associated with implementation actions.

C.3 WATER QUALITY PROGRAMS

C.3.1 - Virginia Pollution Abatement Permit (VPA)

Program Description and Goals

The treatment of sewage sludge, storage and land application of biosolids, industrial wastes (sludge and wastewater), municipal wastewater, and animal wastes (manure/litter from livestock and poultry) are regulated activities in the Commonwealth of Virginia. A VPA permit may be issued by DEQ whenever an owner handles waste and wastewater in a manner that does not involve discharging to a sewage treatment work, or to state waters pursuant to a valid Virginia Pollutant Discharge Elimination System (VPDES)

permit. In general, land application of biosolids, industrial sludge or spray irrigation of industrial and municipal wastewater is covered by a VPA individual permit.

Animal Feeding Operations: An Animal Feeding Operation (AFO) is defined as a lot or facility where animals are stabled or confined for a total of 45 days or more in any 12-month period, and where crops or vegetative growth is not maintained in the normal growing season over the lot or facility. AFOs are regulated under both the VPA Program and the VPDES Program.

AFOs that confine more than 300 animal units of livestock and handle liquid manure are required to obtain coverage under either a VPA general or individual permit. These facilities may apply for coverage by submitting the registration statement for the VPA General Permit for AFOs.

Poultry operations that confine more than 20,000 chickens or 11,000 turkeys must register for coverage under the VPA General Permit for Poultry Waste Management. The VPA Regulation and General Permit for Poultry Waste Management also governs the management of poultry waste utilized or stored by poultry waste end-users or poultry waste brokers.

Concentrated Animal Feeding Operations (CAFOs) are AFOs that confine specified numbers of animals and/or have specific discharge characteristics. CAFOs may be required to obtain coverage under a VPDES individual permit.

Operators of permitted AFOs and CAFOs must implement a site specific nutrient management plan developed by a Department of Conservation and Recreation (DCR) certified nutrient management planner in accordance with §10.1-104.2 of the Code of Virginia and approved by DCR.

Relevant Statute:

- Nutrient Management §10.1-104.2 of the Code of Virginia
- Permits for AFOs § 62.1-44.17:1. of the Code of Virginia
- Poultry Waste Management Program § 62.1-44.17:1.1.

Relevant Regulations:

- Nutrient Management 4VAC5-15-10 et seq.
- VPA Permit Regulation, 9VAC25-32-10 et seq.
- VPA General Permit for Animal Feeding Operations, 9VAC25-191-10 et seq.
- VPA Regulation and General Permit for Poultry Waste Management, 9VAC25-630-10 et seq.
- VPDES Permit Regulation, 9VAC25-31-10 et seq.

Small Animal Feeding Operations Evaluation and Assessment Strategy

DEQ and the Virginia Department of Agriculture and Consumer Services (VDACS) have collaborated on the development of this **non-regulatory** strategy by which **Small Animal Feeding Operations** (AFOs) are evaluated for site-specific risks or impacts to water quality. AFOs classified as “small” are operations that fall below the animal numbers that require a VPA permit. Due to the nature of Small AFOs and the problem of appropriate management of nutrients related to the operation or produced by the confined animals; the operation of a small AFO may present risks or may impact water quality in a manner which requires the implementation of additional control measures that will significantly reduce or eliminate the risk/impact. It is the agencies’ intention to be flexible when addressing these concerns. This strategy complements the regulatory Animal Waste Program of DEQ and the complaint-based Agriculture Stewardship Act Program of VDACS.

Multiple measures are available to owners and operators of small AFOs to allow them to address water quality risks/impacts in the most effective and efficient manner while keeping in mind their goals for the farm. The outcomes are the methods used to implement the measures which will address the water quality risks/impacts identified by the on-site assessment. Any of the following outcomes may be used to address identified water quality risks/impacts:

- Voluntary Approach – memorialized with a letter from DEQ or VDACS; or
- VDACS Agricultural Stewardship Plan; or
- DEQ VPA Animal Waste Permit; or
- DEQ Designation under the VPDES CAFO program.

Sewage Sludge/Biosolids

Sewage sludge is the solid, semisolid, or liquid materials removed during the treatment of domestic sewage in a treatment facility. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced wastewater treatment, scum, domestic septage, portable toilet pumpings, Type III marine sanitation device pumpings, and sewage sludge products. In order for sewage sludge to become biosolids it must be treated to meet the standards established in state and federal regulations for use of biosolids for land application, marketing, or distribution. These regulations require that the sewage sludge undergo established treatment to meet the pathogen control levels, established treatment and management practices to meet the vector attraction reduction, and contain concentrations of regulated metals below established limits. The properly treated and processed sewage sludge becomes "biosolids" which can be safely recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth.

Oversight of the regulations and permits pertaining to biosolids were transferred to DEQ from the Virginia Department of Health (VDH) on January 1, 2008. The VDH Biosolids Use Regulation (BUR) was incorporated into the Virginia Pollution Abatement (VPA) Permit Regulation. Land application of biosolids is now regulated by DEQ under the VPA Permit Regulation and the Virginia Pollutant Discharge Elimination System (VPDES) Permit Regulation. Biosolids treatment and land application requirements have their basis in the requirements found in Federal regulations, [40 CFR Part 503](#), and additional requirements as specified in Virginia State Water Control Law § [62.1-44.19:3](#).

Biosolids treated to meet Class B pathogen standards may be land applied on agricultural, silvicultural (forestland) and mined land reclamation sites. Contractors who land apply or propose to land apply Class B biosolids in Virginia are required to obtain a VPA permit for each county or city in which they land apply. Municipal wastewater treatment plants may also be authorized to land apply Class B biosolids; they may be authorized under their existing VPDES permit or obtain a separate VPA permit for land application activities.

A VPA permit is also required for the operation of a facility, other than the wastewater treatment plant, that prepares biosolids from sewage sludge or further treats the biosolids to produce an exceptional quality biosolids product, including compost. Biosolids that have been treated to meet Class A Pathogen standards, as well exceptional quality standards for vector attraction reduction and metals concentrations, may be permitted for distribution and marketing, allowing the product to be sold to the public by the bag or in bulk. A VPA individual permit must be obtained by the biosolids preparer or the distributor to authorize the activity.

Persons land applying biosolids must implement a site specific nutrient management plan developed by a Department of Conservation and Recreation (DCR) certified nutrient management planner in accordance with [§10.1-104.2 of the Code of Virginia](#). Nutrient management plans must be approved by DCR for biosolids land application on sites owned or operated by the owner or lessee of an AFO, where land

application is proposed at greater than 50% of the agronomic rate more often than once in three years, and at mined and disturbed land sites where biosolids is part of the reclamation plan.

Relevant Statute:

- Nutrient Management §10.1-104.2 of the Code of Virginia
- Biosolids § 62.1-44.19:3. of the Code of Virginia
- Certification of Biosolids Land Appliers § 62.1-44.19:3.1. of the Code of Virginia
- Local enforcement of sewage sludge regulations. § 62.1-44.19:3.2. of the Code of Virginia
- Septage disposal § 62.1-44.19:3.3. of the Code of Virginia
- Notification of local governing bodies. § 62.1-44.19:3.4. of the Code of Virginia

Relevant Regulations:

- Nutrient Management 4VAC5-15-10 et seq.
- Fees for Permits and Certificates 9VAC25-20-10 et seq.
- VPA Permit Regulation, 9VAC25-32-10 et seq.
- VPDES Permit Regulation, 9VAC25-31-10 et seq.
- Sewage Collection and Treatment Regulations 9VAC25-790-10 et seq.

Reclamation and Reuse: In Virginia, the reclamation of either municipal or industrial wastewater and reuse of the reclaimed water is regulated in accordance with the [Water Reclamation and Reuse Regulation \(9VAC25-740\)](#). Facilities that will typically require a permit for water reclamation and reuse include reclamation systems, satellite reclamation systems and reclaimed water distributions systems. End users of the reclaimed water will rarely be required to obtain a permit.

A reclamation system associated with wastewater treatment works that has or will have a surface water discharge will be covered under the [Virginia Pollutant Discharge Elimination System \(VPDES\) permit](#) issued to the wastewater treatment works. A reclamation system associated with wastewater treatment works that does not or will not have a surface water discharge will be covered under the [Virginia Pollution Abatement \(VPA\) permit](#) of the wastewater treatment works. Water reclamation systems independent of treatment works and reclaimed water distribution *systems* will require a VPA permit.

Relevant Statute:

- Promoting Reclamation and Reuse § 62.1-44.2. of the Code of Virginia
- Establishing requirements § 62.1-44.15. of the Code of Virginia
- Developing regulations § 62.1-44.15:28. of the Code of Virginia

Relevant Regulations:

- VPA Permit Regulation, 9VAC25-32-10 et seq.
- VPDES Permit Regulation, 9VAC25-31-10 et seq.
- Water Reclamation and Reuse Regulation 9VAC25-740-10 et seq.
- Sewage Collection and Treatment Regulations 9VAC25-790-10 et seq.

Industrial Waste: A VPA permit is required for the land application of industrial waste (sludge and wastewater). The VPA permit application requires a conceptual design of the treatment works, including the storage facility and land area determination. Analyses are conducted to determine the land application site's capacity to assimilate nutrients, metals, and any other pollutants of concern, in order to demonstrate that adequate land base is provided. Since the [VPA Permit Regulation](#) does not prescribe any technical standards for industrial wastes, DEQ staff uses other technical resources such as the Part IX of the VPA Regulation governing biosolids, [40 CFR Part 503](#) and the [Virginia Nutrient Management Standards and Criteria](#)

([Department of Conservation and Recreation](#), Revised 2005), in the evaluation of land application of specific industrial wastes.

Relevant Regulations:

- VPA Permit Regulation, [9VAC25-32-10 et seq.](#)

Municipal Wastewater: Unless the wastewater treatment works maintains an option to discharge pursuant to a VPDES permit, a VPA permit is required for land application of treated municipal wastewater. DEQ's [Sewage Collection and Treatment Regulations](#) prescribe the design, operational, and maintenance standards for the municipal wastewater treatment works and land treatment systems, and the pretreatment standards of the wastewater being land applied. DEQ staff will consult with VDH during the permitting process regarding health related issues.

Relevant Regulations:

- VPA Permit Regulation, [9VAC25-32-10 et seq.](#)
- VPDES Permit Regulation, [9VAC25-31-10 et seq.](#)
- Sewage Collection and Treatment Regulations [9VAC25-790-10 et seq.](#)

Coordination and Partnerships

The DEQ Animal Waste Program staff and the VDACS Agricultural Stewardship Act (ASA) Program staff currently have a successful working relationship to handle complaints and subsequent investigations of agricultural operations not covered by a DEQ permit, including the coordination of jurisdictional issues involving Small AFOs. Typically, ASA staff have led responses to environmental issues at small AFOs with DEQ involvement in certain cases. This process has proven to be effective in resolving water quality issues found at unregulated facilities. In order to increase the effectiveness of this approach, DEQ and VDACS are partnering to enhance the relationship between the existing DEQ - Animal Waste Program and the VDACS - ASA Program. The development of the Small AFO Evaluation and Assessment Strategy is a proactive measure to compliment the regulatory-based Animal Waste Program and the complaint-based ASA Program. Integral to this Strategy, a Memorandum of Agreement (MOA) between the two Agencies was developed to detail the partnership between the two Agencies. The MOA allows both Agencies to better utilize their existing programs and resources for these operations.

DEQ and VDACS also work with agricultural organizations, agricultural commodity groups, local governments, the Virginia Cooperative Extension (VCE), Soil and Water Conservation Districts (SWCDs), the United States Department of Agriculture - Natural Resources Conservation Service (USDA-NRCS) and others interested in water quality issues to increase education and outreach efforts. The goal is to enhance the awareness among their respective memberships and stakeholders regarding water quality at small AFOs.

C.3.2 - Water Quality Monitoring and Assessment

Program Description and Goals

DEQ staff in each of the regional offices collects water samples on a routine schedule at more than 1,000 locations across the Commonwealth. These water samples are shipped to a state laboratory for chemical and bacterial tests. The samples are tested for levels of nutrients, solids, bacteria associated with human and animal wastes, toxic metals, some pesticides and harmful organic compounds.

DEQ's scientists also perform on-the-spot field tests for dissolved oxygen, pH, temperature, salinity, and additional indications of water quality. Samples from the mud at the bottom of lakes and rivers also are tested for the presence of pesticides and other harmful compounds.

The tens of thousands of samples and chemical test results generated each year are kept in a computer database. Virginia has more than 5 million water quality observations in its database, third largest among the states. During the Water Quality Assessment process, monitoring results are compared to numerical water quality standards to determine if the water quality "measures up," for example, if it is clean enough for swimming, fishing and other uses. If water quality falls below a certain level of cleanliness, DEQ identifies the location, the parameter of concern (such as high bacteria counts) and the likely sources (such as failing septic systems or feedlot runoff). The streams that do not meet Virginia Water Quality Standards are listed in a widely circulated pair of reports called the 305(b) and 303(d) reports. Since 2004, DEQ has combined both the 305(b) Water Quality Assessment and the 303(d) Report on Impaired Waters into the Virginia Water Quality Assessment 305(b)/303(d) Integrated Report.

Chesapeake Bay Monitoring

As part of the Federal-Interstate Chesapeake Bay Program, the Commonwealth of Virginia is engaged in extensive water quality and biological monitoring of the Bay and its major tributaries.

Plankton Monitoring Program This program examines the floating phytoplankton (algae) found in the Bay and its tributaries. The plankton form the basis of the food web which supports the entire Bay ecosystem. The plankton community responds quickly to changes in water quality and will be among the first components of the Bay ecosystem to respond to management actions. The current program, which started in 1985, monitors 6 tributary and 7 Bay stations 12 times per year.

Benthic Monitoring Program Benthic organism, such as shellfish and worms, live in the sediment of the Bay and its rivers. Benthic health is an excellent indicator of water quality. In addition benthic organisms are vital to fish important food resource for many fish.

This program was implemented in 1985 and collects samples each summer from 5 fixed sites in the Bay and 14 fixed sites in the tributaries. There is also a stratified random sampling component which samples 25 sites within each of the James, Rappahannock, York, and Bay main stem.

National Water Quality Initiative

In federal fiscal year (FFY) 2012, the USDA Natural Resources Conservation Service (NRCS), launched the National Water Quality Initiative (NWQI) to help agricultural producers address high priority water quality issues, and encourage program coordination in selected watersheds nationwide. According to the FFY2014 Section 319 guidelines, "the intent of the NWQI is to invest in a selected priority watershed over multiple years to achieve widespread conservation system implementation that will yield accelerated water quality improvements that can be sustained into the future." USDA provides a portion of Environmental Quality Incentive Program (EQIP) financial funds to selected priority watersheds. FFY2014 Section 319 guidelines state that "states will devote § 319 or other resources to monitor water quality results in selected watersheds where circumstances are aligned for assessing water quality impacts from conservation practices"

DEQ is committing § 319 funds (initiated in 2013) to support long term water quality monitoring for E. coli in War Branch-Smith Creek (PS61) within the Shenandoah River Basin in Rockingham County to support

the NWQI in partnership with EPA and NRCS. In-stream bacteria samples are being collected monthly by the DEQ Valley Regional Office in Harrisonburg. The results of the sampling will be shared with EPA and NRCS and will be used to track progress towards improving water quality based on NRCS targeting EQIP funding for BMP implementation on agricultural land in the watershed. EQIP funds are being used to provide cost-share for farmers who implement various BMPs that reduce bacteria from cattle and poultry operations.

TMDL Implementation Monitoring

DEQ's strategy for implementation monitoring of TMDL waters is multi-faceted and includes two elements referred to as "assessment of implementation waters" and "continual monitoring in specific implementation watersheds". To allow assessment of implementation waters for bacteria impairments, samples would be collected over two successive years in a six year 305(b) six year assessment cycle, and for aquatic life impairments (i.e. General Standard) biological monitoring would occur spring and fall in at least one year in the assessment cycle.

DEQ will also include a subset of monitoring stations in selected watersheds where steady bacteria and or biological monitoring will occur after stakeholders have determined that implementation monitoring is warranted. These watersheds would be areas where state and or federal funds (e.g. 319h) are being targeted to implement TMDL implementation or watershed plans. The number of stations monitored annually is dependent upon the availability of financial and human resources and will be identified in DEQ's annual water quality monitoring plan. Section 319 funds may be used to augment this type of monitoring in targeted implementation watersheds.

C.3.3 - Citizen Water Quality Monitoring Program

Program Description

Volunteer monitors play an important role in protecting Virginia's natural resources. Although the Virginia Department of Environmental Quality (DEQ) has a large network of professional monitoring stations, DEQ cannot possibly monitor all the waterways in Virginia. Virginia has approximately 50,000 miles of streams and rivers, 2,500 square miles of estuaries, and 100 significant lakes (public water supply and/or > 100 acres) located in Virginia. Local governments may have their own monitoring programs, but those programs gain tremendously when supplemented with volunteer data. Volunteer data is used in a number of ways: to educate students and the community, to collect baseline information to prioritize monitoring needs and establish background conditions, to contribute to local land use decisions, to indicate unusual conditions, for special studies, and for statewide water quality assessment reports.

In recognition to the importance of volunteer monitoring, in 1999 the Virginia General Assembly authorized the Citizen Water Quality Monitoring Grant Program. This grant program has provided various levels of financial support to promote and sustain volunteer monitoring efforts in Virginia. Due to the success of the grant program and volunteer monitoring in general, the 2007 General Assembly unanimously passed House Bill 1859 which sets a goal of volunteer groups monitoring 3,000 stream miles in Virginia.

Goals

The overall goals of the Virginia Citizen Water Quality Monitoring Program include:

- Supporting citizen monitoring efforts statewide: Alliance for the Chesapeake Bay (ACB), Department of Conservation and Recreation (DCR), and Virginia Save our Streams (VA SOS) provide a number of services to citizen monitoring groups, including coordination with DEQ monitoring efforts, technical assistance, assistance in locating funding, and training workshops.
- Promoting appropriate quality assurance and quality control: ACB, DCR, DEQ and VA SOS encourage use of appropriate protocols.
- Promoting the use of citizen water quality data in Virginia: Citizen monitoring data is actively sought for inclusion in the Water Quality Assessment Report prepared by DEQ under section 305(b) of the federal Clean Water Act for the U.S. Environmental Protection Agency (EPA) and the Virginia Water Quality Monitoring, Information and Restoration Act.
- Promoting partnership and collaboration among citizen water quality monitoring efforts.

Coordination and Partnerships

The Virginia Citizen Water Quality Monitoring Program supports Virginia Citizens for Water Quality (VCWQ). VCWQ is a statewide consortium of citizen groups, agency representatives, businesses, and individuals interested in preserving and enhancing water resources in Virginia. CWQ conducts an annual citizen monitoring summit and serves as an information exchange for individuals and organizations involved with volunteer water quality monitoring. VCWQ hosts a list-serve to facilitate information exchange, communication, and group discussion related to water quality issues in Virginia. The DEQ Water Quality Data Liaison distributes meeting announcements and other information of interest to individuals and organizations on the VCWQ and other mailing lists.

Cooperative partnerships have enhanced relationships between state agencies and citizen monitoring organizations, which have improved the quality and quantity of citizen water quality data collected in Virginia. This foundation is expected to grow in the future.

C.3.4 - Water Quality Assessments

Program Description and Goals

During the Water Quality Assessment process, monitoring results are compared to numerical water quality standards to determine if the water quality "measures up," for example, if it is clean enough for swimming, fishing and other uses. If water quality falls below a certain level of cleanliness, DEQ identifies the location, the parameter of concern (such as high bacteria counts) and the likely sources (such as failing septic systems or feedlot runoff). The streams that do not meet Virginia Water Quality Standards are listed in a widely circulated pair of reports called the 305(b) and 303(d) reports. Since 2004, DEQ has combined both the 305(b) Water Quality Assessment and the 303(d) Report on Impaired Waters into the Virginia Water Quality Assessment 305(b)/303(d) Integrated Report.

Water Quality Monitoring, including Chesapeake Bay Monitoring

The objectives of these programs are the characterization of current conditions, identification of long-term trends, and the improvement in the understanding of processes that control water quality. Including measurements of both plankton and benthos is an important step towards determining the relationship

between water quality and living resources. The results of these monitoring programs will provide a measurement of the success of management actions toward the protection and restoration of the Bay.

- Number of NPS Impairments Removed from VA's IR: Annually review state IR for NPS impairments (DO, Fecal, TSS, etc.) removed as a result of NPS activities and include information in NPS annual report. Compare the previous IR to the current IR. Write Type 1 or Type 2 success stories if possible.
- Improve water quality conditions in impaired watersheds nationwide using the watershed approach. (WQ-SP12.N11). Write a success story; impairment does not need to be linked to NPS, point source accomplishments are allowed.
- Maintain water quality monitoring of NPS Implementation project areas to document success. Report number of stations monitored annually.
- Continue water quality monitoring for watersheds associated with USDA's National Water Quality Initiative.
- Continued utilization of DEQ's Citizen Water Quality Monitoring Program as a mechanism to document water quality improvements associated with DEQ's NPS TMDL Implementation Program.
- No net loss of existing wetland acreage and no net loss of functions in all surface waters.

Initiatives and Implementation

Implementation priorities for waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for preventative actions.

C.3.5 - Virginia Water Quality Standards

Program Description and Goals

Virginia manages water quality of its streams, lakes, reservoirs and tidal waters through a continuing planning process modeled after Section 303 of the Clean Water Act. The process is watershed based and is managed by DEQ in cooperation with several state agencies, local governments, private organizations, industry, citizens and the federal government. Water quality standards are an integral part of this process.

The State Water Control Law mandates the protection of existing high-quality state waters and provides for the restoration of all other state waters so they will permit reasonable public uses and will support the growth of aquatic life. The adoption of water quality standards under § 62.1-44.15(3a) of the law is one of the State Water Control Board's methods of accomplishing the law's purpose.

Water quality standards consist of statements that describe water quality requirements. They also contain numeric limits for specific physical, chemical, biological or radiological characteristics of water. These statements and numeric limits describe water quality necessary to meet and maintain uses such as swimming and other water-based recreation, public water supply, and the propagation and growth of aquatic life.

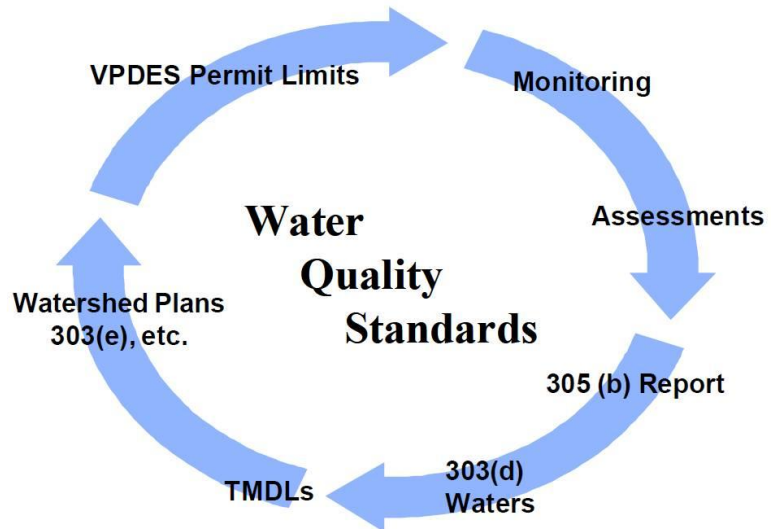
Standards include general and specific descriptions, because not all requirements for water quality protection can be numerically defined. The standards will be adjusted constantly to reflect changes in law, technology and information available to the Water Board and DEQ.

The standards are intended to protect all state waters for recreation, wildlife, the growth of a balanced population of aquatic life, and the production of edible and marketable fish and shellfish. Through the protection of these uses, other uses such as industrial water supply, irrigation and navigation also are usually protected. Should additional standards be needed to protect other uses as dictated by changing circumstances or improved knowledge, they will be adopted.

Water quality standards must have at least the following three components:

- Designated Uses
- Water Quality Criteria to Protect Designated Uses
- Antidegradation Policy

The following chart summarizes the water quality standards and assessment framework:



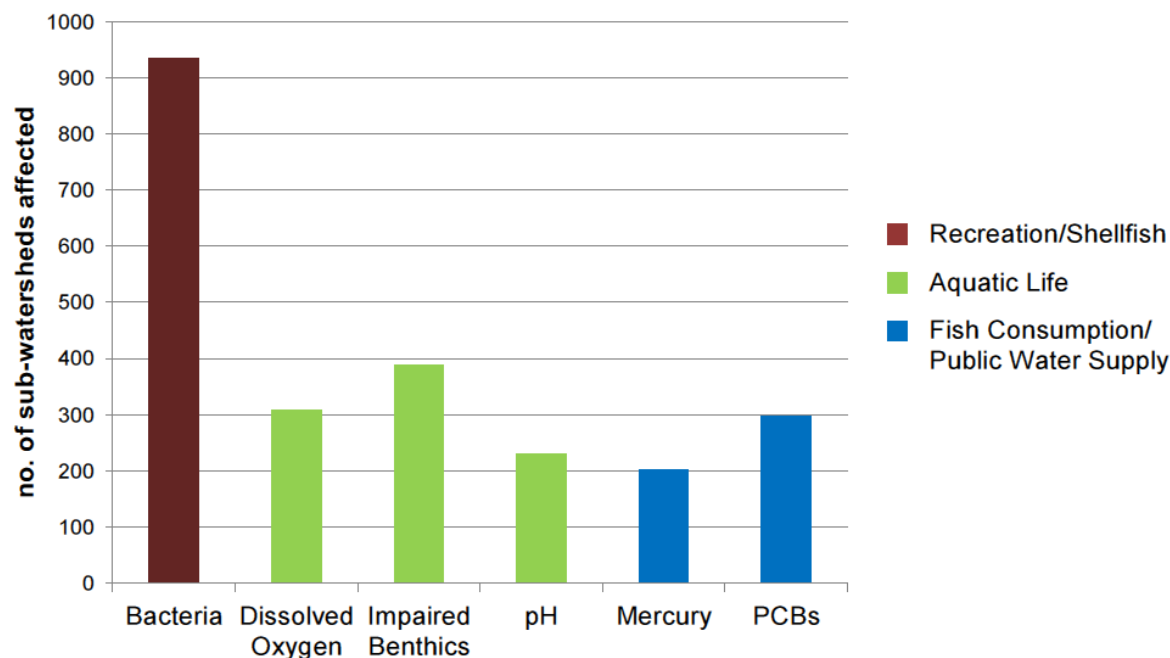
Designated uses

Designated uses are those uses specified in water quality standards for each water body or segment whether or not they are being attained. All Virginia waters are designated for the following uses: recreational uses, e.g., swimming and boating; the propagation and growth of a balanced, indigenous population of aquatic life, including game fish, which might reasonably be expected to inhabit them; wildlife; and the production of edible and marketable natural resources, e.g., fish and shellfish.

Through the protection of these minimum uses, other uses such as industrial water supply, irrigation and navigation also are protected. Should additional standards be needed to protect other uses as dictated by law (such as public water supply) or improved knowledge, they will be adopted.

The following figure depicts water quality violations based on designated uses:

Figure C. Common causes of designated use impairment.



Water quality criteria

Water quality criteria can include general narrative statements that describe good water quality and specific numerical concentrations that are known to protect aquatic life and human health. The criteria are adjusted as needed to reflect changes in law and science. Numerical criteria are for specific physical, chemical (toxics), and radiological characteristics of the waters (e.g. minimum of 4.0 mg/L dissolved oxygen, 2.5 ug/L ammonia, 9.0 ug/L copper). Narrative criteria include general protective statements known as the "free froms." This narrative criteria says that all state waters shall be free from substances attributable to sewage, industrial waste, or other waste in concentrations, amounts, or combinations which contravene established standards or interfere directly or indirectly with designated uses of such water or which are inimical or harmful to human, animal, plant, or aquatic life.

Numeric chlorophyll 'a' criteria exist for man-made reservoirs and natural lakes (special standard "dd"). The Chesapeake Bay and its tidal tributaries have dissolved oxygen, submerged aquatic vegetation, and water clarity criteria. Site specific criteria exist for the tidal Pamunkey and Mattaponi Rivers (special standard "aa") and for the tidal James River (special standard "bb"). The criteria were developed to protect these waters from the harmful effects of nutrient over-enrichment. Significant increases in algae due to nutrient over-enrichment can harm water quality, food resources and habitats, and decrease the oxygen that fish and other aquatic life need to survive. Additional information regarding nutrient criteria and ongoing nutrient criteria development efforts is located on the Nutrient Criteria Development web page.

These numerical and narrative criteria describe water quality necessary to protect designated uses such as swimming, drinking and the propagation and growth of aquatic life.

Virginia's Antidegradation Policy

Virginia's Antidegradation Policy protects water quality at three levels or "tiers".

- Tier 1 specifies that existing in stream water uses and the level of water quality to protect the existing uses shall be maintained and protected. This means that as a minimum, all waters should meet adopted water quality standards.
- Tier 2 protects water that is better than specified water quality standards. Only in limited circumstances may water quality be lowered in these waters.
- Tier 3 includes exceptional waters where no new, additional or increased discharge of sewage, industrial wastes or other pollution is allowed. These waters must be specifically listed in the regulation.

C.4 MANAGEMENT OF WETLANDS AND SUBMERGED LANDS

C.4.1 - Submerged Lands Management Program

The Virginia Marine Resources Commission (VMRC) administers the Submerged Lands Permitting Program throughout the state (Sec. 28-2-1200 through 28.2-1213 of the Code of Virginia). In non-tidal areas this program includes waterways with flows greater than five cubic feet per second (CFS) or drainage areas greater than five square miles. Permits are issued through a joint permit review process involving local, state and federal agencies. Permits are reviewed based on compliance with statutory requirements and Subaqueous Guidelines as well as technical assistance provided by cooperating state and federal agencies. Technical assistance comments are received from the Virginia Department of Environmental Quality (DEQ), the Virginia Department of Conservation and Recreation (DCR), the Virginia Department of Health (VDH), and Department of Game and Inland Fisheries (DGIF). Impacts on water quality, water quantity, habitat and aquatic resources, as well as affects on adjacent properties, are considered during permit review. BMPs are included in permits when applicable, as are requirements for minimum flows and provisions for continued fish passage. When applicable, permits can also require compliance with erosion and sediment control practices described in the 1992 Virginia Erosion and Sediment Control Handbook.

VMRC administers the Submerged Lands, Tidal Wetlands and Coastal Primary Sand Dunes/Beaches programs and is charged with the review of all tidal wetlands and sand dune permit decisions of local wetlands boards. The Tidal Wetlands program applies throughout Tidewater, Virginia, and each Tidewater locality has the option of adopting the wetlands or dunes acts and forming a wetlands board to review applications for use or development of tidal wetlands or dunes. The Submerged Lands program applies state-wide to all state-owned submerged lands. Generally this would include waterways with flows greater than five cubic feet per second or drainage areas greater than five square miles.

Three types of environmental permits are issued by VMRC; (1) subaqueous or bottom lands, (2) tidal wetlands, and (3) coastal primary sand dunes permits. VMRC's authority and responsibilities are derived from Subtitle III of Title 28.2 of the Code of Virginia and specifically regulate physical encroachment into these valuable resource areas.

The permit process relies on a single Virginia joint local/state/federal permit application. The review process for which this application was originally designed, considers various local, state and federal statutes

governing the disturbance or alteration of environmental resources. VMRC plays a central role as an information clearinghouse for all three levels of review. Applications receive independent, yet concurrent, review by local wetland boards, VMRC, DEQ and the U.S. Army Corps of Engineers.

Process to improve surface water quality and restore in stream and riparian habitat through the operation and maintenance of existing modified channels Virginia requires a permit for all channelization projects, and considers impacts to water quality, floodplain, endangered species, and erosion and sediment control. The Joint Permit Application program, which is coordinated by the Virginia Marine Resources Commission (VMRC), is a process for federal and state agencies to comment on potential impacts of proposed projects within waters and wetlands of the state. In cases where impacts are considered significant, modeling may be required prior to any activity. Through Virginia's programs, primary and secondary impacts from channel modifications are assessed.

Pending Initiatives

VMRC has developed a general permit for Emergency Situations and Water Quality Improvement Projects in Non-tidal Waterways (CHAPTER 4 VAC 20-395-10 ET SEQ). A general permit is currently under development for living shoreline projects in response to recent and pending legislation.

The purpose of 4 VAC 20-395 is to provide a general permit for activities in or on state-owned subaqueous beds whereby property owners, project sponsors under the "Emergency Watershed Protection Program" or "EWP program" administered by NRCS, and/or agencies or organizations under the approval of a property owner adjacent to non-tidal waterways are granted authority to install structures to stabilize watercourses and stream banks in emergency situations, to construct facilities or conduct activities resulting in waterway restoration, which are funded, designed or implemented by authorized agencies that improve water quality (including but not limited to restoration of natural flows, habitat modifications and habitat improvements), or to conduct public utility emergency response activities related to existing public utility infrastructures located in or on [subaqueous beds](#).

The general permit for living shorelines is intended to provide for an expedited review of those projects along tidal shorelines that include necessary living shoreline design elements. Living shorelines projects include shoreline management practices that provide erosion control and water quality benefits; protect, restore or enhance natural shoreline habitat; and maintain coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. This effort is intended to authorize and encourage the use of living shorelines as the preferred alternative for stabilizing tidal shorelines in the Commonwealth.

C.4.2 - Wetland and Stream Protection

Program Description and Goals

The Department of Environmental Quality (DEQ) administers the Virginia Water Protection (VWP) Permit Program and an associated compliance program through regulation of

- [surface water withdrawals](#) and non-agricultural impoundments.
- impacts to surface waters such as land clearing, [dredging](#), [filling](#), [excavating](#), draining, or ditching in open water, streams, and wetlands.

As part of a larger effort to protect water quality under the DEQ Water Division, VWP is tasked with protecting wetlands and streams to protect their beneficial uses. DEQ strives to protect [state waters](#) and prevent and reduce water pollution in Virginia. In addition, DEQ coordinates grant funded initiatives to explore future wetlands, stream and lake protection methodologies and policies. DEQ partners closely with the U.S. Army Corps of Engineers and the Virginia Marine Resources Commission to achieve agency goals. The Virginia Water Protection Permit Program serves as Virginia's Section [401 certification](#) program for federal Section 404 permits issued under the authority of the Clean Water Act. State law requires that a VWP permit be obtained before disturbing a wetland or stream by clearing, filling, excavating, draining, or ditching. Application is made through the Joint Permit Application process for concurrent federal and state project review.

Goal: No Net Loss of Existing Wetland Acreage and No Net Loss of Functions in All Surface Waters

Compensatory mitigation, including elements such as compensation ratios and the unified stream methodology, are important components of the VWP program which support the goal of No Net Loss.

Compensatory mitigation is defined in the Virginia Water Protection Program regulation as "actions taken that provide some form of substitute aquatic resource for the impacted aquatic resource" (9 VAC 25-210-10). In Virginia, compensatory mitigation may include:

- Wetland creation or restoration
- Stream restoration (see the Unified Stream Methodology below)
- Purchase or use of wetland mitigation bank credits at a DEQ-approved mitigation bank
- Contributing to a DEQ-approved in-lieu fee fund
- Preservation of existing wetland and streams, when utilized in conjunction with creation, restoration, or mitigation bank credits
- Preservation or restoration of upland buffers adjacent to surface waters, when utilized in conjunction with creation, restoration, or mitigation bank credits

The compensation ratios below are generally accepted, especially when compensation is required for a VWP general permit activity. Alternative ratios may be required by DEQ for activities permitted under a VWP individual permit.

- 2 acres compensation for each 1 acre of impact (2:1) for forested wetland impacts
- 1.5:1 for scrub-shrub wetland impacts
- 1:1 for emergent wetland impacts
- project-specific ratios for other surface water impacts

The Unified Stream Methodology (USM) is a collaborative effort between the U.S. Army Corps of Engineers, Norfolk District (COE) and the Virginia DEQ. The purpose of the USM Manual is to describe a method to rapidly assess what the stream compensation requirements would be for permitted stream impacts and the amount of "credits" obtainable through implementation of various stream compensation practices. See, [Unified Stream Methodology and Revised USM Forms](#). The USM Manual describes a process to: 1) assign a Reach Condition Index (RCI) to the stream to be impacted; 2) assess the type or severity of impact; 3) determine the compensation requirement; and, 4) determine what types of and the amount of the various compensation practices that will satisfy the compensation requirement. The USM manual may be used for projects requiring stream compensation under the COE regulatory program and the DEQ's Virginia Water Protection Permit Program.

Coordination and Partnerships

Review of VWP permit applications is closely coordinated with the COE, the Virginia Marine Resources Commission, the Virginia Department of Game and Inland Fisheries, and the Department of Conservation and Recreation Division of Natural Heritage.

Initiatives and Implementation

Wetlands Monitoring and Assessment Strategy

Virginia's wetland monitoring and assessment strategy allows for both general reporting on status and trends, as well as providing for more intense analysis of select watersheds for assessment of cumulative impacts to wetland condition and water quality. This assessment approach will generate data that will be used to conduct biannual reporting on status and trends of wetlands as part of Virginia's Integrated 305(b)/303(d) report, and to evaluate the effectiveness of regulatory and voluntary programs in meeting Virginia's mandate of no net loss of wetland resources through regulatory programs, and a net resource gain through voluntary programs.

Implementation: Protection of Compensatory Mitigation Sites

Compensatory mitigation sites must be preserved in perpetuity by recordation of a restrictive covenant.

Priorities

When practicable, the VWP program provides a preference for compensatory mitigation in the same fourth order sub basin, as defined by the hydrologic unit boundaries of the National Watershed Boundary Dataset, as the impacted site, or in an adjacent sub basin within the same river watershed as the impacted site.

Measures of Success

The annual report of the State Program General Permit reports on permitting activity and characterizes impacts and compensation to gage achievement of No Net Loss.

D. WATERSHED PRIORITIZATION

Program Description

This plan sets forth elements of a framework for setting watershed priorities. Over the ensuing two years, watershed priorities will be developed that help focus implementation and guide program development and decision making, including resource allocation and funding. The prioritization framework supports development of priorities for development of Total Maximum Daily Loads (TMDLs) and watershed implementation plans for restoration of impaired waters, identification of watersheds where alternative cleanup plans would be appropriate, and priorities for watersheds where watershed implementation plans would be appropriate to prevent or minimize degradation of high quality waters.

To ensure efficiency and effectiveness, watershed prioritization will need to be flexible enough to consider scale, data and resource availability. While the National Watershed Boundary Dataset (NWBD) hydrologic unit scale (approximately 40,000 acres) provides a consistent basis for watershed prioritization, the range of

watershed priorities across the Commonwealth may require that a multi scale approach be used for establishing watershed priorities. For example, TMDL development may be facilitated by using a large hydrologic unit approach. Conservation of high quality streams, such as those identified through the Healthy Waters Initiative (described below) or probabilistic monitoring, may dictate that a sub watershed scale be used for identifying preventative watershed priorities.

Goals

- Complete Nonpoint Source Assessment chapters for the 2014, 2016 and 2018 Integrated 303(d) 305(b) report.
- Develop and implement a watershed prioritization process for TMDL development, NPS and IP program planning and NPS Implementation and follow timeline in new 303(d) vision. Priority Watershed Framework Document or GIS Layer, Approval of Alternative Clean-up Plans (e.g. non-TMDL Watershed Based Plans) by 2014. Articulate priorities by 2016 and alternatives by 2018.
- Establish watershed roundtables for priority river basins to provide watershed-based forums for stakeholders to participate in defining critical watershed needs, targeting problems for solutions, and providing input on potential management options to restore and protect water quality. Provide grant resources through annual CGIG and 319h Requests for Proposals (RFP) for the establishment and support of at least 12 watershed roundtables in Virginia.

Prioritization Framework

Through the development of a prioritization framework, the Virginia Department of Environmental Quality (DEQ) will align the state Section 303(d) Watershed Prioritization Vision; priorities identified in Federal Section 319 Guidance; the pending Chesapeake Bay Agreement; water supply planning priorities; and, watersheds priorities that are identified through water quality monitoring and through the state Nonpoint Source Assessment. Consistent with U.S. Environmental Protection Agency Guidance, this framework will lead to both preventative based priorities and restorative based priorities. This framework will build on Virginia's well developed Nonpoint Source Assessment Prioritization system. Core elements of this prioritization framework are listed below:

Conceptual Prioritization Framework

Preventative Based Priorities

Criteria/Considerations	Resources	Existing Programs	Future Development
<ul style="list-style-type: none"> • DEQ designated Tier III – Exceptional State Waters • Biological Integrity • Rare, Threatened, or Endangered Species • Drinking Water Sources • State Scenic Rivers • High quality water resources with significant threats 	<ul style="list-style-type: none"> • DEQ Probabilistic monitoring • Academic and state agency monitoring and assessment data such as the Interactive Stream Assessment Resource (INSTAR) • Federal, regional, and local level data. • Natural Heritage data 	<ul style="list-style-type: none"> • Chowan Watershed • Clinch and Powell Rivers 	<ul style="list-style-type: none"> • Develop scoring criteria for selecting conservation priorities

- from land use or headwater degradation
- State Water Supply Plan

Restorative Based Priorities

Criteria/Considerations	Resources	Existing Programs	Future Development
<ul style="list-style-type: none"> • Develop prioritization ranking criteria • Drinking and/or recreational water source threat • Cost/Support • Degree of impairment or restoration potential • Watershed scale • Type of impairment(s) • Threat to high value resources • Water quality monitoring data 	<ul style="list-style-type: none"> • 303(d), 305 (b) Water Quality Assessment, • TMDL Program • NPS Assessment 	<ul style="list-style-type: none"> • Scoring Criteria to Prioritize TMDL IPs • Scoring to Prioritize and Rank Shellfish TMDL IPs • Chesapeake Bay WIP and WIP II 	<ul style="list-style-type: none"> • Using NPS assessment to prioritize TMDL development

Virginia Section 303(d) Watershed Prioritization Vision

Virginia is working to develop a watershed prioritization system that will guide the location and timing of the TMDL development, the use of alternative restoration or protection approaches, and the allocation of resources. Consistent with the Long-Term Vision for Assessment, Restoration, and Protection established under the Clean Water Act Section 303(d) Program, this prioritization system will provide for the “effective integration of implementation efforts to restore and protect the nation’s aquatic resources.” A five year timeline has been established for fully developing and implementing this system:

“Prioritization” For the 2016 integrated reporting cycle and beyond, Virginia will review, systematically prioritize, and report priority watersheds or waters for restoration and protection in their biennial integrated reports to facilitate State strategic planning for achieving water quality goals

“Assessment” By 2020, Virginia will identify the extent of healthy and CWA Section 303(d) impaired waters in each State’s priority watersheds or waters through site-specific assessments

“Protection” For the 2016 reporting cycle and beyond, in addition to the traditional TMDL development priorities and schedules for waters in need of restoration, Virginia will identify protection planning priorities and approaches along with schedules to help prevent impairments in healthy waters, in a manner consistent with each State’s systematic prioritization

“Alternatives” By 2018, Virginia will use alternative approaches, in addition to TMDLs, that incorporate adaptive management and are tailored to specific circumstances where such approaches are better suited to implement priority watershed or water actions that achieve the water quality goals of each state, including identifying and reducing nonpoint sources of pollution

“Engagement” By 2014, EPA and Virginia will actively engage the public and other stakeholders to improve and protect water quality, as demonstrated by documented, inclusive, transparent, and consistent communication; requesting and sharing feedback on proposed approaches; and enhanced understanding of program objectives

“Integration” By 2016, EPA and Virginia will identify and coordinate implementation of key point source and nonpoint source control actions that foster effective integration across CWA programs, other statutory programs (e.g., CERCLA, RCRA, SDWA, CAA), and the water quality efforts of other Federal departments and agencies (e.g., Agriculture, Interior, Commerce) to achieve the water quality goals of each state

Nonpoint Source Assessment and Prioritization

With the passage of the Clean Water Act and subsequent state Water Quality Improvement Act, Virginia produces a biennial Nonpoint Source Assessment. This assessment, as described below, has provided the analytical capability to target program resources based on both natural resource considerations and on pollutant loadings.

Nonpoint Source Assessment

Virginia performs a Nonpoint Source (NPS) Assessment and subsequent hydrologic unit prioritization on a biennial basis aligning with the production of the Virginia Water Quality Assessment 305(b) Report. This product is prepared by the Virginia Department of Conservation and Recreation (DCR) and the Virginia Department of Environmental Quality (DEQ) to provide a comparative evaluation of the state's waters, on a hydrologic unit basis, for assisting in the targeting of limited resources and funds for NPS pollution protection activities to where they are most needed.

The NPS Assessment predicts the potential loadings of NPS pollutants at the 6th order hydrologic unit level of the National Watershed Boundary Dataset (NWBD). Sixth order (12 digit) units average about 40,000 acres in size. Prioritization is based on the loadings of the NPS pollutants as well as to a measure of biological integrity and the occurrence of NPS impaired waters and source water protection needs.

The NPS Assessment and Prioritization study summarizes information from DCR, DEQ, Virginia Department of Forestry (VDOF), U.S. Department of Agriculture - Natural Resources Conservation Service (USDA-NRCS), local Soil and Water Conservation Districts (SWCDs), the Department of Biological Systems Engineering (BSE) at Virginia Tech (VT), the Virginia Department of Health (VDH), the Virginia Department of Game and Inland Fisheries (VDGIF), the Virginia Department of Mines, Minerals, and Energy (VDMME), the Center for Environmental Studies (CES) at Virginia Commonwealth University (VCU), the US Environmental Protection Agency (EPA), the Chesapeake Bay Program (CBP), the U.S. Geological Survey (USGS), the Conservation Technology Information Center (CTIC) and other existing sources of information useful to the determination of nonpoint source pollution impacts to Virginia waters.

There are three major components to the NPS Assessment and Prioritization study that can be used to evaluate water quality conditions and needs - potential pollutant loadings, water quality impairments, and measures of biological health. The main focus is the determination of potential loadings of nitrogen, phosphorous, and sediment (hereafter referred to as NPS pollutants) by hydrologic unit by general land use classes. The evaluation of hydrologic units by impaired waters and aquatic species health represents water quality measures not necessarily related to the potential NPS pollutant loads. In order to prioritize clean-up and protection activities, hydrologic units of prime importance for the protection of public surface water supplies were also determined.

Existing Nonpoint Source Priorities

Virginia will continue to move forward with implementation of existing priorities through the ensuing two year period. Currently Virginia is focusing much of its attention and resources in identified watersheds from

prior prioritization processes. The following priorities were based on criteria such as duration of an impairment and associated TMDL, local or regional initiative and interest, an assessment of feasibility of implementation, regional or national priorities, and programmatic prioritization processes.

Current priorities include:

- Continued implementation of approved TMDL Implementation Plans (see appendix XXX for list of watersheds with current NPS implementation activity)
- Continued implementation of priorities identified in the Chesapeake Bay WIP documents
- Continued support of watershed roundtable activity in ~14 identified watershed areas.
- Provide agricultural cost-share in high ranking hydrologic units based upon NPS Assessment.

2010-2013 NPS Assessment Priorities for Nitrogen, Phosphorous and Sediment (these will be replaced with the 2014-2016 priorities when available in August 2014)

Figure 4.1-10

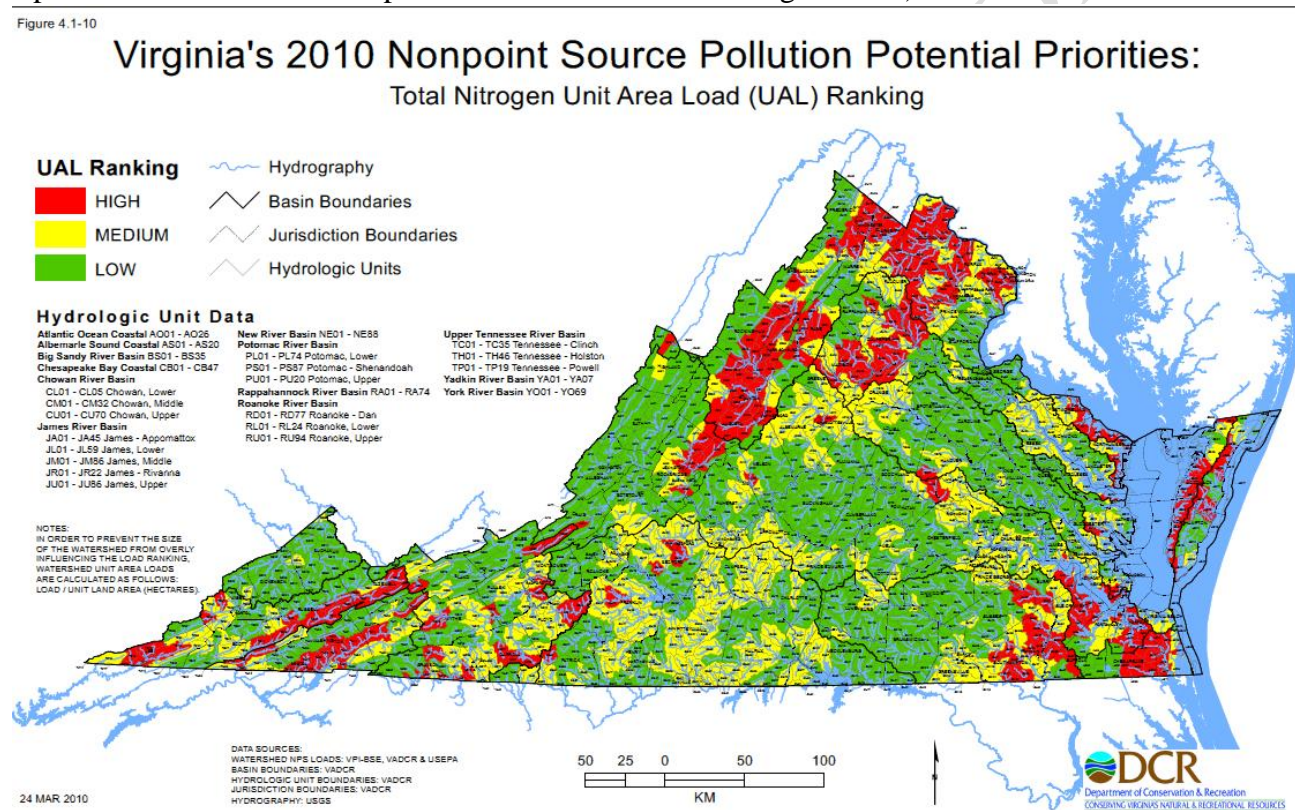


Figure 4.1-11

Virginia's 2010 Nonpoint Source Pollution Potential Priorities: Total Phosphorus Unit Area Load (UAL) Ranking

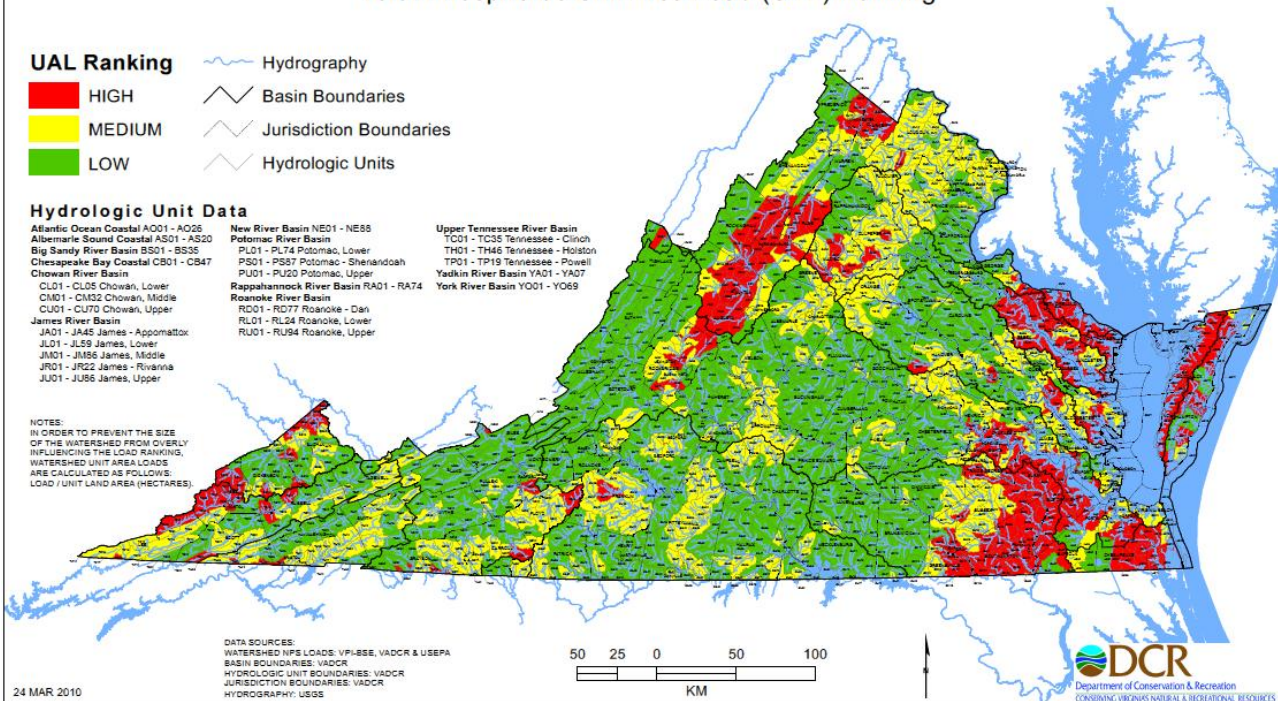
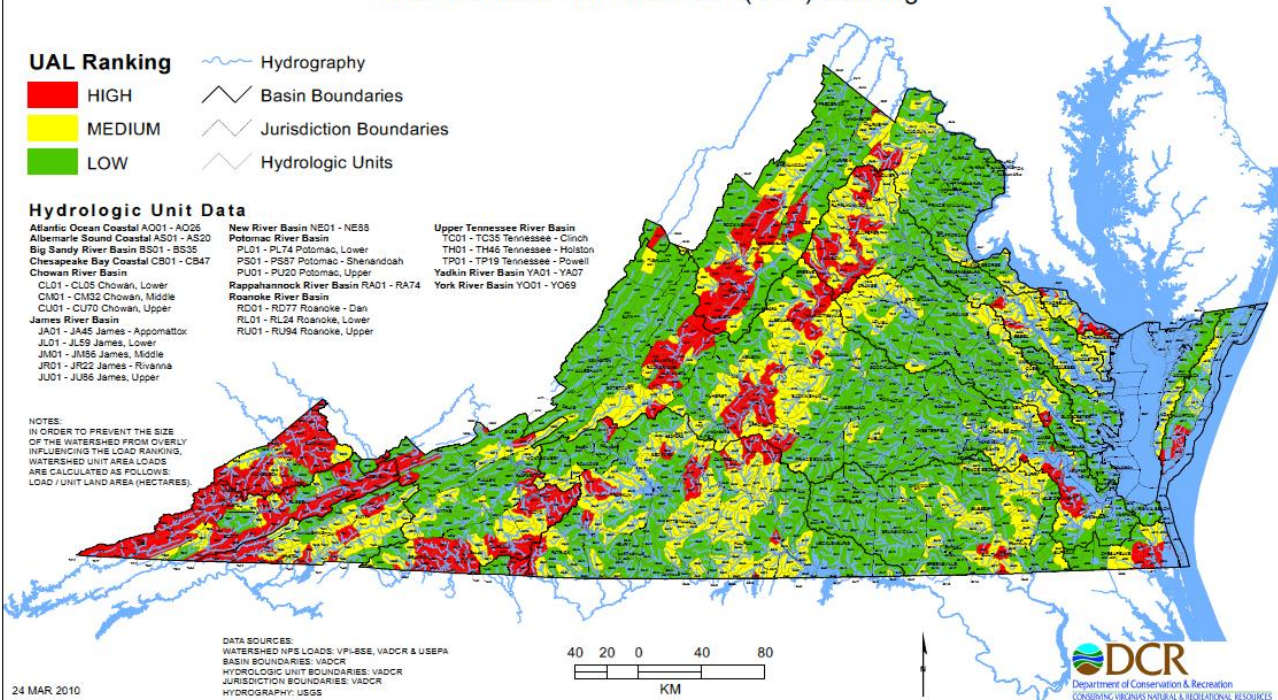


Figure 4.1-12

Virginia's 2010 Nonpoint Source Pollution Potential Priorities: Total Sediment Unit Area Load (UAL) Ranking



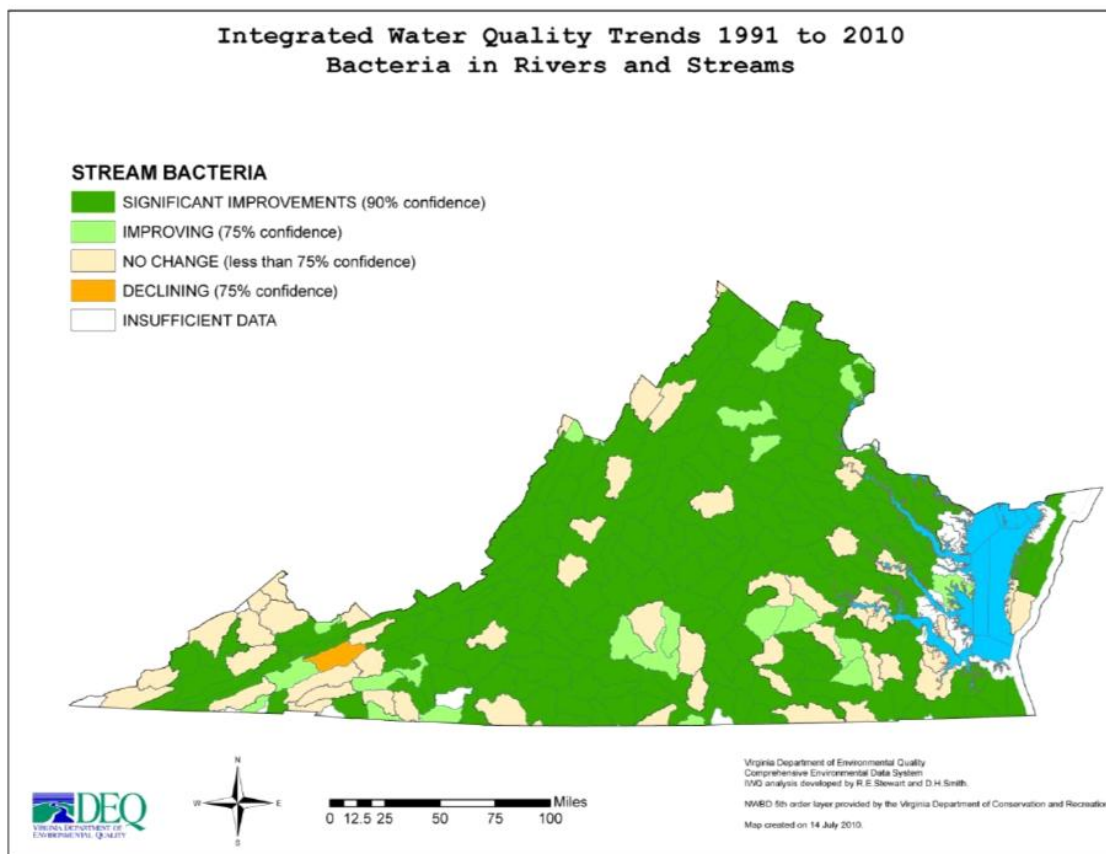
The Virginia Department of Environmental Quality (DEQ) released the Final 2012 305(b)/303(d) Water Quality Assessment Integrated Report (Integrated Report) on January 27, 2014. The 2012 Integrated Report is a summary of the water quality conditions in Virginia from January 1, 2005, through December 31, 2010. The report satisfies the requirements of the U.S. Clean Water Act sections 305(b) and 303(d) and the Virginia Water Quality Monitoring, Information and Restoration Act. The goals of Virginia's water quality assessment program are to determine whether waters meet water quality standards, and to establish a schedule to restore waters with impaired water quality.

Water quality standards designate uses for waters. There are six designated uses for surface waters in Virginia:

- Aquatic life
- Fish consumption
- Public water supplies (where applicable)
- Recreation (swimming)
- Shellfishing
- Wildlife

The following excerpts from this report provide a good overview of water quality trends in Virginia's rivers and streams.

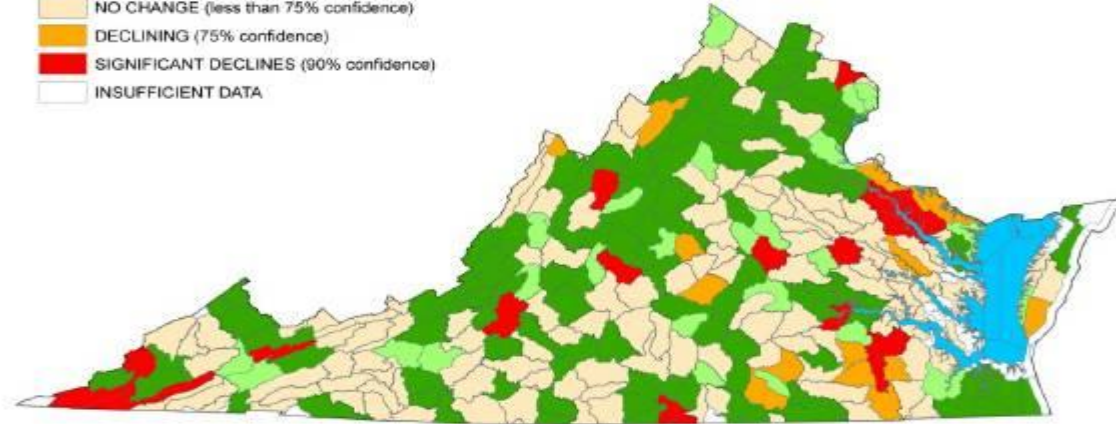
Figure E. Map of watershed-scale trend analysis on bacteria concentrations from 1991 to 2010.



Integrated Water Quality Trends 1991 to 2010 Nitrogen in Rivers and Streams

STREAM NITROGEN

- SIGNIFICANT IMPROVEMENTS (90% confidence)
- IMPROVING (75% confidence)
- NO CHANGE (less than 75% confidence)
- DECLINING (75% confidence)
- SIGNIFICANT DECLINES (90% confidence)
- INSUFFICIENT DATA



0 10 20 40 60 80 Miles

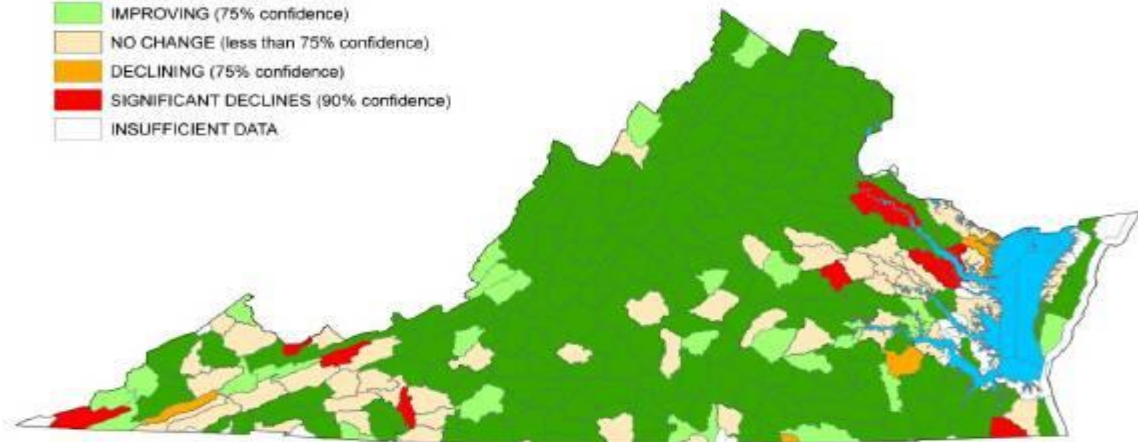
Virginia Department of Environmental Quality
Comprehensive Environmental Data System
TMDL analysis developed by R. E. Stewart and D. H. Smith

WBD0 5th order layer provided by the Virginia Department of Conservation and Recreation
Map created on 14 July 2010.

Integrated Water Quality Trends 1991 to 2010 Phosphorus in Rivers and Streams

STREAM PHOSPHORUS

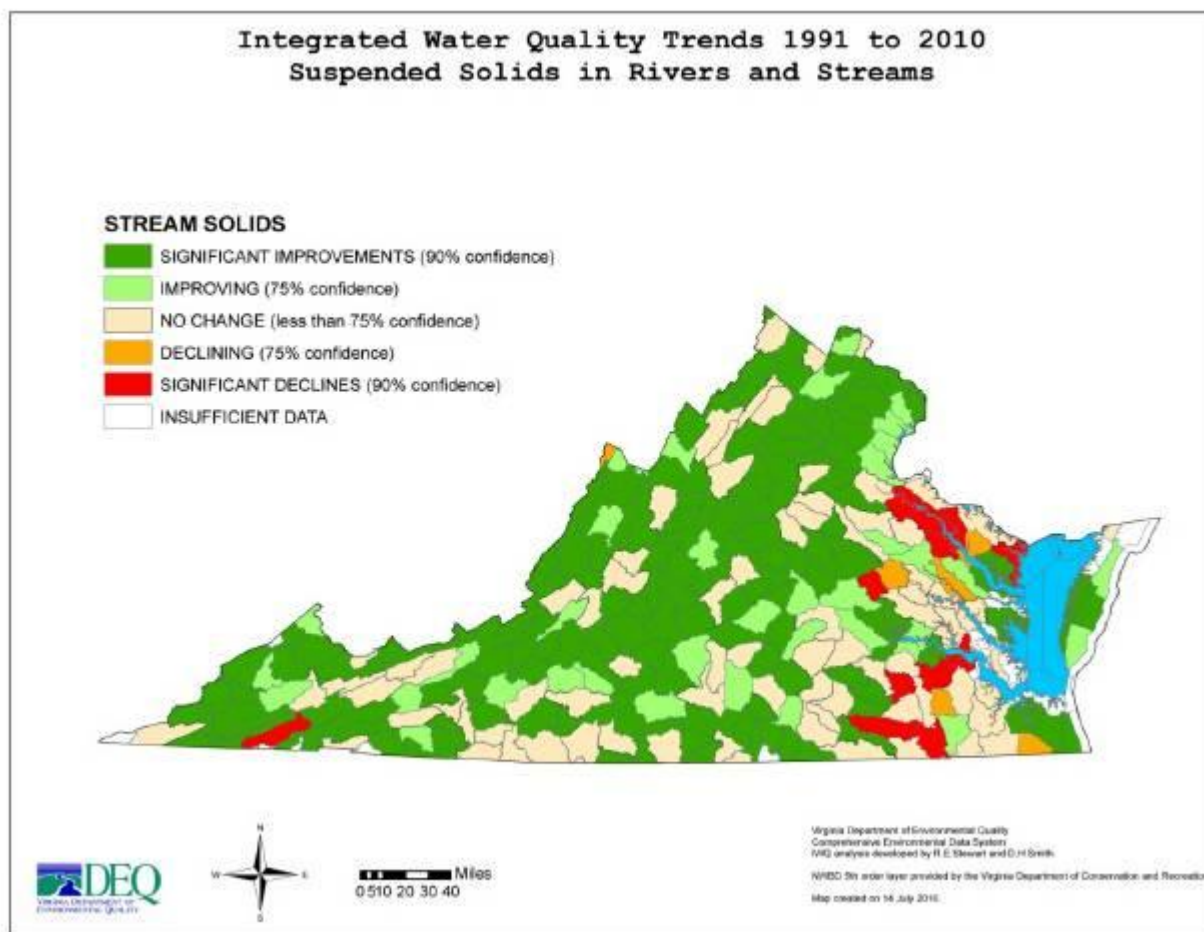
- SIGNIFICANT IMPROVEMENTS (90% confidence)
- IMPROVING (75% confidence)
- NO CHANGE (less than 75% confidence)
- DECLINING (75% confidence)
- SIGNIFICANT DECLINES (90% confidence)
- INSUFFICIENT DATA



0 10 20 40 60 80 Miles

Virginia Department of Environmental Quality
Comprehensive Environmental Data System
TMDL analysis developed by R. E. Stewart and D. H. Smith

WBD0 5th order layer provided by the Virginia Department of Conservation and Recreation
Map created on 14 July 2010.



E. MILESTONE DEVELOPMENT AND TRACKING

The Department of Environmental Quality, along with partnering agencies, has aligned Nonpoint Source Plan and Chesapeake Bay Implementation planning in order to incorporate the two-year milestone development process of the Chesapeake Bay Watershed Implementation Plan. This alignment offers a pragmatic way to ensure that these planning efforts are current and well coordinated. The following table reflects the 2014 and 2015 short term NPS implementation priorities and associated [Chesapeake Bay 2014-2015 milestones](#) as well as long range projections of 5-year goals and targets. These milestones were developed from input from state agencies including DEQ, the Department of Conservation and Recreation (DCR), the Virginia Department of Agriculture and Consumer Services (VDACS), the Virginia Department of Transportation (VDOT), the Virginia Department of Health (VDH), the Virginia Department of Forestry (DOF), and the Department of Mines, Minerals and Energy (DMME), as well as other local conservation partners. Some of these actions are river basin or Chesapeake Bay watershed specific, others are statewide in scope. Collectively, they reflect the Commonwealth's ongoing commitment to controlling nonpoint source pollution. As always, all of these milestones will be contingent upon adequate resources and funding.

DEQ plans to develop another two sets of 2-year NPS milestones (2016-2017 and 2018-2019); this effort will coincide with Chesapeake Bay 2-year milestone development. Virginia's 2014-2018 NPS milestones will be amended to reflect these interim 2-year, short-term milestone development processes.

2014-2019 PRIORITY VIRGINIA NPS MILESTONES (Draft 6/12/2014)

VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019
Agriculture- GOAL: Widespread adoption of cost-effective agricultural best management practices					
A 1	Determine resource needs for agricultural BMP implementation through SWCDs. Conduct an annual Agricultural needs assessment for General Assembly by November 1 of every year (CB A.2)	DCR-DSWC	2 reports	2 reports	2 reports
A 2	Enhanced funding for livestock exclusion. Fund qualified stream exclusion practices at 100% with State funds. (CB A.5)	DCR-DSWC	100%	Projected: 100%	
A 3	Track voluntary BMP collection statewide through development of BMP dataset for input to EPA-CBPO Watershed Model (CB A.8)	DCR-DSWC	Ongoing	Ongoing	Ongoing
A 4	Develop agricultural NPS assessment data. Data developed, analyzed and reported to DEQ. (CB A.12)	DCR and DEQ	1 report	1 report	1 report
VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019
Nutrient Management- GOAL: Improve water quality in the Virginia's streams, rivers, and the Chesapeake Bay					
NM 3	Increase the number of nutrient management plans on unpermitted dairies. 75% of facilities will have a NM plan by 12/31/2015 (CB A.7)	DCR-DSWC	75%		
NM 5	Increase nutrient management planning to include 85% of all applicable state-owned land. Each year 780,000 cumulative acres of agricultural nutrient management plans (CB A.10)	DCR-DSWC	780K ac NMP cumulative	Projected: 780k ac cumulative	Projected: 780k ac cumulative
NM 7	Complete evaluations of the remaining small AFOs in Virginia's portion of the Chesapeake Bay watershed in accordance with the Small AFO Strategy developed in cooperation with VDACS. Approximately 460 small AFOs remain to be evaluated out of the 800 identified in the WIP. (CB A.16)	DEQ VDACS	460 AFOs evaluated by 12/31/15		
VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019
Agricultural Stewardship Act: Provide a common-sense solution to water pollution problems caused by agricultural operations					
AS8	Respond to all water quality complaints in a timely fashion	VDACS	Ongoing through FY19; complete by ~12/31/2019		
VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019
Virginia Resource Management Program: To encourage the implementation of additional agricultural BMPs and to increase the reporting and verification of voluntary BMPs					
RM 1	Achieve widespread implementation of the Resource Management Program by agricultural producers. Continue promotion and development of the Resource Management Program. Develop RMPs on at least 40 agricultural operations annually by 12/31/2015. (CB A.6)	DCR-DSWC	40 RMPs annually	Projected 40 RMPs per year	Projected 40 RMPs per year

VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019
Forestry – Goal: Provide technical services; best management practices information, and silvicultural activity enforcement on the Commonwealth's forest watersheds, non-tidal wetlands and riparian areas to help ensure the quality of drinking and recreational waters from these areas for future generations.					
F3	Continue BMP implementation monitoring to determine BMP rates being applied to forest harvest sites within the Bay Watershed through funding provided by a CBRAP Grant. Monitoring meets the criteria set out in the Southern Group of State Foresters BMP Implementation Monitoring Protocol. Funding through 12/31/2015. (CB F.3)	VDOF	BMP Monitoring Conducted thru 12/31/15		
F4	Provide cost-share to forest harvesting contractors to implement BMPs, with the goal of 90% of harvested area treated by 12/31/2015. This assumes funding from state WQIF is made available. (CB F.4)	VDOF	90% harvested area treated		
F6	Provide cost-share funding to landowners to establish riparian forest buffers that would not otherwise qualify for cost-share funding through federal programs. This assumes WQIF funds are made available. (CB F.6)	VDOF	Amount of Funding provided	Active (projected)	Active (projected)
F7	Slow the loss of forestland conversion and associated water quality benefits resulting from necessary municipal infrastructure development. By 12/31/2015 avoid 2000 acres of forestland conversion from proposed development projects. (CB F.7)	VDOF	2000 ac by 12/31/15	Projected: 2000 ac by 12/31/17	Projected: 2000 ac by 12/31/19
F8	Open Field Targeting Initiative – target open lands in Central VA that are not currently being used in an agricultural capacity or are otherwise abandoned. Work in a 4 county area of Central VA to identify and contact landowners that have been targeted for tree planting projects by 12/31/2015. (CB F.8)	VDOF	4 counties	Will be established during next 2 year milestone development process	
F10	Continue to focus riparian forest buffer establishment efforts in Potomac River Watershed and expand these efforts to the northern piedmont through the establishment of "Buffer Teams" funding through a U. S. Forest Service Bay Grant. Buffer Teams composed of NRCS, FSA, DCR, VDOF, SWCD through a focused riparian forest buffer - GIS targeting initiative. Work in a new 4 County area in Central Virginia by 12/31/2015. (CB F.11)	VDOF	4 counties	Will be established during next 2 year milestone development process	
F11	Permanently conserve forestland through permanent conservation easements or acquisition. Conserve 6,000 acres in the CB parts of Virginia by 12/31/2015. (CB F.12)	VDOF	6,000 acres in CB	Projected: 6,000 acres per year	Projected: 6,000 acres per year
VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019
Resource Management and Land Conservation					
LC1	By December 31, 2014 develop priorities and goals for Land Conservation in Virginia to be accomplished by 12/31/2017	DCR-OLC/DCR-DNH	Goals established	Goals met	
HW1	By 2025, 100% of state-identified currently healthy water and watersheds remain healthy	DCR-DNH	Ongoing		
VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019
On-site Septic Systems					
S1	Develop and implement operation and maintenance (O&M) portions of final <i>Alternative Onsite Sewage Systems (AOSS)</i>	VDH	complete by 12/31/2014		

	Regulations (12VAC5-613). Issue Manual and track implementation through 12/31/2014. (CB OSS.1)				
S4	Work with DEQ and local governments to capture and report the number of septic tank pump-outs that occur as a result of the Chesapeake Bay Preservation Act requirements (local ordinances), voluntary efforts and repairs throughout the Bay watershed. 36,000 septic tank pump-outs each year thru 12/31/15. (CB OSS.4)	VDH/DEQ	36,000 septic tanks pumped annually	Projected: 36,000 septic tanks pumped annually	Projected: 36,000 septic tanks pumped annually
S5	Work with DEQ and local governments to capture and report the number of connections to public sewer throughout the Bay watershed. 600 sewer connections by 12/31/2015. Track via Virginia Environmental Information System (VENIS) database or other mechanism. (CB OSS.5)	VDH/DEQ	600 sewer connections	Projected: 600 sewer connections	Projected: 600 sewer connections
S6	Report the number of alternative onsite sewage systems (AOSS) meeting the current BMP for 50% reduction of TN, and the new BMPs for 20%, 38%, and 69% reduction of TN, pending their final approval by the Chesapeake Bay Program. Load reduction of 2,870 lbs TN over baseline conditions at the edge of drainfield during the milestone period. The nitrogen requirements in the Virginia AOSS regulation became effective in December 2013. (CB OSS.6)	VDH	2,870 Lbs TN reduced	Projected: 2,870 lbs TN reduced	Projected: 2,870 lbs TN reduced
S8	Work with local governments and recipients of 319(h) Project Funding to capture and report the number of residential septic repairs and replacement projects, septic Tanks pumped and the number of connections of public sewer of failed septic systems or straight pipes completed throughout Virginia.	DEQ	250 systems annually	250 systems annually	250 systems annually
VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019
Resource Extraction: Goal: Reduce water quality impacts association with current and abandoned/orphaned resources extraction activities.					
RE1	Enhance coordination between DEQ and DMME to collect and report BMPs installed on active mine sites as well as reclamation of active and abandoned and orphaned mines. (CB E.1)	DMME/DEQ	Ongoing long-term goal thru 12/31/2018		
RE2	Ensure compliance with permit conditions for proper site planning and best management practice implementation. Goal of 24,000 acres of Erosion and Sediment Control on Extractive Lands each year by 12/31/2015. (CB E.2)	DMME	24,000 acres E&S each year	Projected: 24,000 acres E&S each year	Projected: 24,000 acres E&S each year
RE3	Document and report reclamation of active and orphaned and abandoned mine sites. Goal 1,000 acres of mine reclamation by 12/31/2015. (CB E.3)	DMME	1,000 acres	Projected: 1,000 acres	Projected: 1,000 acres
VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019
Urban Programs (Stormwater Management and Erosion and Sediment Control): Goal: control stormwater from developed sites to protect downstream properties and local streams and to minimize the potential for flooding					
U5	Achieve reductions from new development and redevelopment using urban BMPs through ramped up compliance with the Virginia Stormwater Management permit (VSMP) and the stormwater provisions of the Chesapeake Bay Preservation Act (CBPA). Consolidated BMP tracking system will capture BMPs installed for both Chesapeake Bay Preservation Act and VSMP compliance. (CB U.7)	DEQ	System completed by 12/31/2017		
VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019

Urban Nutrient Management					
UN M1	Nutrient Management on Urban Turf – update standards and criteria per 2013 legislation. Goal to train 110 urban nutrient management planners, 35 VT extension specialists and 600 VDACS-certified fertilizer applicators by 12/31/2015. cumulative(CB U.9)	DCR-DSWC	745 trained personnel	Projected: 745 trained personnel	Projected: 745 trained personnel
UN M2	Nutrient management on urban turf – residential sector. Goal is to implement urban residential turf pilot projects in 6 communities by 12/31/2015 (CB U.10)	DCR-DSWC	6 pilot projects	Projected: 3 pilot	Projected: 3 pilot
UN M3	Nutrient management on urban turf – golf courses. Begin development of cost-share program for golf course nutrient management. Commitment of urban nutrient management plans completed on 11,000 acres of golf courses by 12/31/2015. (CB U.11)	DCR-DSWC	11,000 acres	Projected: 11,000 acres	NMP on 75% of all golf courses
UN M4	Nutrient management on urban turf – state-owned facilities. By 12/31/2015, 85% of state owned facilities will have active plans. (CB U.12)	DCR/VDACS	85% of facilities	Will be established during next 2 year milestone development process	
VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019
Chesapeake Bay Program					
CB1	Conduct compliance reviews of local Chesapeake Bay Act programs once for each locality by 2019	DEQ	Complete compliance reviews for all CB Act localities once by 2018		
VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019
Watershed Source Water and Ground Water Protection					
SW 1	The established goals for Virginia were 55% of the population protected by waterworks with a substantially implemented protection plan and 16% of community water systems protected.	DEQ and VDH	55% population protected by water works with a source water protection plan		
VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019
Watershed Planning and Implementation					
W1	Address Water Quality Impairments through evaluation of pollutant loadings and land uses and prescribing reductions. Maintain full engagement of stakeholders during this process. Continue current pace of TMDL development, developing 100 TMDL equations per 2-year period, while allowing for exploration of non-TMDL approaches. Under the 2013 303(d) Vision, this milestone will evolve into a goal of meeting a portion of impairments by unit area rather than developing a set number of TMDL equations or approaches.	DEQ-WP	Equivalent to 100 TMDL equations	Equivalent to 100 TMDL equations	Equivalent to 100 TMDL equations
W5	Number of TMDL Implementation Plans or Watershed Based Plans completed and EPA approved.	DEQ-WP	10 Plans	10 Plans	10 Plans
W6	Number of waterbody impairments that have TMDL Implementation Plans or Watershed Based Plans (cumulative).	DEQ-WP	350	370	390
W7	Number of TMDL implementation Projects Active Annually	DEQ-WP	20	20	20
W9	Update DEQ TMDL BMP Cost-share Guidelines by June of every year	DEQ-WP	2 guidelines	2 guidelines	2 guidelines
W14	Enhance DEQ's Comprehensive Environmental Data System (CEDS) to include Implementation Plan Spatial Data into existing DEQ Datasets. Develop database and all features by 6/30/2016 (TMDL Implementation Plan and Implementation	DEQ-WP	Development	System complete 6/30/2016	

	Project modules of DEQ's CEDS database)				
W15	BMP Tracking: 1) Development of Specifications for DEQ Nonpoint Source BMP Database and 2) Implement a BMP Spot Check Program. Develop database and all features by 6/30/2016	DEQ-WP	Development	Conduct program	Conduct program
W16	Number of water bodies identified in VA's 1998/2000 IR or subsequent years as being primarily NPS impaired that are partially or fully-restored (WQ-10): Identify Partially or fully restored water bodies in Appendix C of state's IR primarily impaired by NPS pollutants in 1999 court ordered 303(d) list or 1998/2000 IR; review NPS related activities in watershed where water body was restored; write Type 1 NPS success story; and identify activities to maintain water quality.	DEQ-WP	2 Stories	2 Stories	2 Stories
W17	Number of water bodies identified in VA's 1998/2000 IR or subsequent years as being primarily NPS impaired that show water quality improvements (WQ-10): Identify water bodies in Appendix C of state's IR primarily impaired by NPS pollutants in 1999 court ordered 303(d) list or 1998/2000 IR or later that demonstrate a significant trend of improved water quality; document interim progress towards restoration; review NPS related activities in watershed where water body was restored; write Type 2 NPS success story; and identify activities to maintain water quality.	DEQ-WP	4 Stories	4 Stories	4 Stories
W18	Estimated annual reductions in pounds of nitrogen from NPS water bodies (from Section 319 funded projects) (WQ-9a): Annually review information from DCR, DMME, USDA, watershed coordinators, NPS staff and stakeholders, and TMDL Implementation projects for NPS load reductions of nitrogen. Include this information in NPS annual report. Targeted based upon annual average of 2010-2013 GRTS	DEQ-WP	2,206,053 lbs/year	2,206,053 lbs/year	2,206,053 lbs/year
W19	Estimated annual reductions in pounds of phosphorus from NPS water bodies (from Section 319 funded projects) (WQ-9b): Annually review information from DCR, DMME, USDA, watershed coordinators, NPS staff and stakeholders, and TMDL Implementation projects for NPS load reductions of Phosphorous. Include this information in NPS annual report. Targeted based upon annual average of 2010-2013 GRTS	DEQ-WP	227,395 lbs/year	227,395 lbs/year	227,395 lbs/year
W20	Estimated annual reductions in tons of Sediment from NPS Water Bodies (from Section 319 funded projects) (WQ-9c): Annually review information from DCR, DMME, USDA, watershed coordinators, NPS staff and stakeholders, and TMDL Implementation projects for NPS load reductions of Sediment. Include this information in NPS annual report. Targeted based upon Annual average of 2010-2013 GRTS	DEQ-WP	8,020 tons/year	8,020 tons/year	8,020 tons/year
W21	Estimated annual reductions in CFU of Bacteria from NPS Water Bodies (from Section 319 funded projects): Annually review information from DCR, DMME, USDA, watershed coordinators, NPS staff and stakeholders, and TMDL Implementation projects for NPS load reductions of Bacteria. Include this information in NPS annual report. Targeted based upon annual average of 2010-2013 GRTS	DEQ-WP	7.138E+15 CFU	7.138E+15 CFU	7.138E+15 CFU

VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019
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Water Quality Programs					
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W Q 3	Maintain water quality monitoring of NPS Implementation project areas to document success. Report number of stations monitored annually.	DEQ			
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W Q4	Continue water quality monitoring for watersheds associated with USDA's National Water Quality Initiative	DEQ/NR CS	3 projects	1 project	1 project
W Q6	No net loss of existing wetland acreage and no net loss of functions and designated uses in all surface waters. Determined by analysis of Total Wetland Credits versus Total Wetland Impacts Permitted (Acres)	DEQ	Ongoing long-term goal thru 12/31/2018; Annual SPGP Report:		
VA Statewide Milestones for Water Quality Improvement		Lead	2014-2015	2016-2017	2018-2019
Watershed Prioritization					
WP 1	Complete Nonpoint Source Assessment chapters for the 2014, 2016 and 2018 Integrated 303(d) 305(b) report	DEQ - WP & DCR	1 report	1 report	1 report
WP 2	Develop and implement a watershed prioritization process for TMDL development, NPS and IP program planning and NPS Implementation, and follow the timeline in new 303(d) vision. Compose Priority Watershed Framework Document or GIS Layer, Approval of Alternative Clean-up Plans (e.g. non-TMDL Watershed Based Plans) by 2014. Articulate Priorities by 2016, Alternatives by 2018	DEQ-WP	Framework and process by 2015	Priorities by 2016	Alternatives by 2018
WP 3	Establish watershed roundtables for priority river basins to provide watershed-based forums for stakeholders to participate in defining critical watershed needs, targeting problems for solutions, and providing input on potential management options to restore and protect water quality.	DEQ-WP	12 watershed groups	12 watershed groups	12 watershed groups

*Projected goals after 2015 will be confirmed during subsequent 2-year milestone development process.
WP-Watershed Programs, DSWC-Division of Soil and Water Conservation

F. NPS Implementation - Funding and Assistance

Clean Water Financing and Assistance

Program Description and Goals

Low Interest Loans for Agricultural Best Management Practices

The Department of Environmental Quality (DEQ) Agricultural Best Management Practices Loan Program provides Virginia agricultural producers with a low interest financing alternative for costs associated with the implementation of specified best management practices (BMPs) which relate to water quality improvement in the Commonwealth.

From its beginning in January 2000 through June 2010 the DEQ Virginia Agricultural BMP loan program provided a total of \$34,450,337 in low interest loans to 409 Virginia agricultural producers who were implementing Best Management Practices that will improve water quality in the Commonwealth. The enabling statute is at §62.1-229.1 - Loans for agricultural best management practices.

Virginia Clean Water Revolving Loan Fund

Since 1987, the Virginia Clean Water Revolving Loan Fund (Fund) has been providing low interest loan funding for water quality improvement projects throughout the Commonwealth. Funds are currently provided to local governments, public service authorities, agricultural producers, partnerships, and corporations for a variety of project types. Loan repayments are circulated back into the Fund to create a dedicated source of revenue available for future clean water projects.

The State Water Control Board (Board) has the authority to administer the policy aspects of the Fund, determining who receives funds, at what interest rates, and under what terms. The Board has delegated responsibility for management of the day-to-day operations of the Fund to its staff in the Department of Environmental Quality (DEQ). The Virginia Resources Authority (VRA) serves as the financial manager of the Fund.

Virginia Clean Water Revolving Loan Fund Land Conservation Loan Program

The purpose of the Virginia Land Conservation Loan Program is to provide a long term source of low interest financing for the conservation of land in Virginia in order to improve and/or protect the water resources of the Commonwealth. Additional benefits of the program include the protection of open space or natural values of the properties and/or the assurance of the availability of the land for agricultural, forestal, recreation, or open space use. Although these other benefits are of value, the principle focus and utilization of the Fund is on beneficial impact to water quality. The enabling statute is § 62.1-229.3. *Loans for land conservation.*

Virginia Clean Water Revolving Loan Fund Storm Water Loan Program

The purpose of the Virginia Stormwater Loan Program is to provide a long term source of low interest financing for constructing facilities or structures or implementing best management practices that reduce stormwater runoff in order to improve and/or protect the water resources of the Commonwealth. The enabling statute is at § 62.1-229.4. Loans for stormwater runoff control best management practices.

Conclusion

This plan characterizes the wide array of nonpoint source pollution management programs in Virginia. It also describes the many partnerships that make these programs successful. As Virginia moves forward with implementation of nonpoint source programs, these partnerships along with vital stakeholder and citizen buy in will be key “to protect, restore and improve the water quality of all bays, lakes, rivers, streams, creeks, and other state waters from pollution and impairment.”

Resources

- DEQ NPS (319) Pollution Management webpage:
 - <http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/NonpointSourcePollutionManagement.aspx>
- DEQ NPS Annual Reports webpage:
 - <http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/NonpointSourcePollutionManagement/NonpointSourceAnnualReports.aspx>
- DEQ TMDL Implementation Projects webpage:
 - <http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/TMDL/TMDLImplementation/TMDLImplementationProjects.aspx>
- EPA Section 319 NPS Success Story webpage(s):
 - <http://water.epa.gov/polwaste/nps/success319/> (National)
 - <http://www.epa.gov/reg3wapd/nps/success.html> (Region 3)
- EPA's Grants Reporting and Tracking System Public webpage
 - <http://iaspub.epa.gov/apex/grts/f?p=GRTS:199>

Glossary of Acronyms

ACOE - U.S. Army Corps of Engineers
AFO – Animal Feeding Operation
AMD - Acid Mine Drainage
AML - Abandoned Mine Land
AOSE - Authorized On-site Soil Evaluators
APNEP – Albemarle Pamlico National Estuary Program
AWEP – Agricultural Water Enhancement Program
BMP - Best Management Practice
CAFO - Confined Animal Feeding Operations
CBF - Chesapeake Bay Foundation
CBNRRVA – Chesapeake Bay National Estuarine Research Reserve in VA
CBPA - Chesapeake Bay Preservation Act
CCPI – Cooperative Conservation Partnership Initiative
CD – Consent Decree
CFU – Colony Forming Unit
CIG – Conservation Innovation Grant
CNPCCP – Coastal Nonpoint Control Program
CNPSPC - Coastal Nonpoint Source Pollution Control
CREP – Conservation Reserve Enhancement Program
CRP – Conservation Reserve Program
CSO – Combined Sewer Overflow
CTO – Certificate to Operate
CWA - Clean Water Act
CWSRF – Clean Water State Revolving Fund
CZARA – Coastal Zone Act Reauthorization Amendments
CZARA - Coastal Zone Management Act Reauthorization Amendments
CZMA – Coastal Zone Management Act
DCR - Department of Conservation and Recreation, Virginia
DEQ - Department of Environmental Quality, Virginia
DGIF - Department of Game and Inland Fisheries, Virginia
DGO - Division of Gas and Oil
DMLR - Division of Mined Land Reclamation
DMM - Division of Mineral Mining
DMME - Department of Mines, Minerals and Energy, Virginia
DO – Dissolved Oxygen
DOF - Department of Forestry, Virginia
DOI - U.S. Department of the Interior
E&S - Erosion and Sediment (Control)
EA - Environmental Assessment
EIR - Environmental Impact Review
EPA - U.S. Environmental Protection Agency
EQIP – Environmental Quality Incentives Program
ESC - Erosion and Sediment Control

FFY – Federal Fiscal Year
FONSI - Funding of No Significant Impact
FSA – Farm Service Agency
GAO – Government Accountability Office
GIS - Geographic Information System
GIT4 - Chesapeake Bay Program Goal Implementation Team Four
GRTS – Grants Reporting and Tracking System
GW – Ground Water
HAB – Harmful Algal Bloom
HEL - Highly erodible land
HRI – Healthy Rivers Initiative
HRPDC - Hampton Roads Planning District Commission
HUC – Hydrologic Unit Code
HWI – Healthy Waters Initiative
IBC – Impaired Biotic Communities
IBI – Index of Biotic Integrity
IMCC - Interstate Mining Compact Commission
INSTAR – Interactive Stream Assessment Resource
IR – Integrated Report
ITE - Institute of Transportation Engineers
LOA - Letter of Agreement
MOA - Memorandum of Agreement
MOU - Memorandum of Understanding
MS4 – Municipal Separate Storm Sewer System
MTAS - Marine Technical Advisory Service
NEPA - National Environmental Policy Act
NOAA - National Oceanic and Atmospheric Administration
NPDES - National Pollutant Discharge Elimination System
NPS - Nonpoint Source Pollution
NPSAC - Nonpoint Source Advisory Committee
NRCF – Natural Resources Commitment Fund
NRCS - Natural Resources Conservation Service
NWI – National Wetland Inventory
NWQI – National Water Quality Initiative
orgs - organizations
OSDS – On-site Disposal System (a.k.a. septic systems)
OSM - U.S. Department of the Interior Office of Surface Mining
OSRW – Outstanding State Resource Water
PDC - Planning District Commission
ppb – Parts per billion
ppm – Parts per million
QAPP – Quality Assurance Project Plan

QMP – Quality Management Plan
RAMP - Rural Abandoned Mine Program
RC&D – Resource Conservation and Development District
RCaP – Rural Community Assistance Program
RFP – Request for Proposal
RRPDC - Richmond Regional Planning District Commission
SAV - Submerged aquatic vegetation
SDWA - Safe Drinking Water Act
SEAS - Shoreline Erosion Advisory Service
SMCRA - Surface Mining Control and Reclamation Act
SMRA - Stormwater Management Regulations and Act
SONR - Secretary of Natural Resources
SR – Southern Rivers
SRF – State Revolving Fund
SSC – Suspended sediment concentration
SSCB – State Soil Conservation Board
SWAP – Source Water Assessment Plan
SWCD - Soil and Water Conservation District
TKN – Total Kjeldahl Nitrogen
TMDL - Total Maximum Daily Load
TSS - Total Suspended Solids
U.S.C. – United States Code
USACE – United States Army Corps of Engineers
USDA – United States Department of Agriculture
USFS - United States Forest Service
USFWS– United States Fish and Wildlife Service
USGS - United States Geologic Survey
VCE - Virginia Cooperative Extension
VCP - Virginia Coastal Program
VDACS - Virginia Department of Agriculture and Consumer Services
VDH - Virginia Department of Health
VDOT - Virginia Department of Transportation
VEVA – Virginia Ecologically Valuable Areas
VIMS - Virginia Institute of Marine Science
Virginia Tech - Virginia Polytechnic Institute and State University
VirGIS - Virginia Geographic Information System
VMRC - Virginia Marine Resources Commission
VNRCF – Virginia Natural Resource Commitment Fund
VPDES - Virginia Pollutant Discharge Elimination System
VPF – Virginia Poultry Federation
VPI&SU - Virginia Polytechnic Institute and State University
VR - Virginia Register

VSMP – Virginia Stormwater Management Program
WHIP Wildlife Habitat Incentive Program
WIP – Watershed Implementation Plan
WMP – Watershed Management Plan
WQIA - Water Quality Improvement Act
WQIF - Water Quality Improvement Fund
WQMS – Water Quality Monitoring Strategy
WQS – Water Quality Standards
WREP – Wetland Reserve Enhancement Program
WRP – Wetland Reserve Program

GLOSSARY

305(b) Water Quality Assessment a report prepared in compliance with both section 305 of the federal Clean Water Act and Virginia's Water Quality Monitoring, Information and Restoration Act

303(d) TMDL Priority List a listing of Virginia's impaired or threatened waters that is developed in compliance with section 303(d) of the federal Clean Water Act, Virginia's Water Quality Monitoring, Information and Restoration Act, and the State/EPA 106 agreement

assessment an evaluation of watersheds based on the presence or lack thereof of specific nonpoint source indicators

beneficial use use of a [water] resource that includes, but is not limited to, domestic (including public water supply), agricultural, commercial, industrial, water-based recreational uses, and the propagation and growth of aquatic life

benthic pertains to the bottom, or bed, of a body of water

best management practice (BMP) structural or nonstructural practices or combination of practices that are determined to be the most effective and practical (including technological, economic, and institutional considerations) means of controlling point and nonpoint pollutant levels compatible with environmental quality goals

biological water quality sampling the use of biological or ecological characteristics, such as the growth, survival and reproduction of an aquatic species, the diversity, structure and functioning of an aquatic community, and characterizations of aquatic habitat, to measure the "effects" of environmental impairment

bioretention basin water quality BMP engineered to filter the water quality volume through an engineered planting bed, consisting of a vegetated surface layer (vegetation, mulch, round cover), planting soil, and sand bed (optional), and into the in-situ material—also called rain gardens

bioretention filter bioretention basin with the addition of a sand layer and collector pipe system beneath the planting bed

combined sewer overflow (CSO) sewer systems that combine sanitary waste and stormwater in instances of heavy rains, usually untreated; cities with older systems often have CSOs

confined animal feeding operation (CAFO) a lot or facility, together with any associated treatment works, where (1) animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period; and (2) crops, vegetation, forage growth or post-harvest residues are not sustained over any portion of the operation of the lot or facility (pertains to both operations that require a permit and non-permitted operations)

environmental benefit an improvement in water quality and/or the structure and function of living resources

eutrophication the process of over-enrichment of water bodies by nutrients, often typified by the presence of algal blooms

GIS Geographic Information System—a method of overlaying spatial land and land use data of different kinds. The data are referenced to a set of geographical coordinates and encoded in a computer software system. GIS is used by many localities to map utilities and sewer lines and to delineate zoning areas.

ground water any water, except capillary moisture, beneath the land surface in the zone of saturation or beneath the bed of any stream, lake, reservoir or other body of surface water within the boundaries of this commonwealth, whatever may be the subsurface geologic structure in which such water stands, flows, percolates or otherwise occurs

habitat assessment the evaluation of the physical, biological, and chemical environment and evaluation of its impact on biodiversity and ecosystem function and integrity

harvesting (forestry) all planning & design, road, log deck and skid trail construction, and maintenance during active logging to remove wood products from the forest to a processing plant

high priority watershed a watershed assigned to the category of nominal scaling associated with the greatest impacts to water quality for the criteria being ranked (i.e., total agriculture high priority watershed). When a criteria is not explicitly referenced with this term, the highest rank of the overall (total) NPS pollution assignment is implied

impaired water water that is not meeting the state water quality standard; water with fish or shellfish harvesting prohibition by the Virginia Department of Health (VDH); and water where biological monitoring indicates moderate or severe impairment

impervious cover a surface composed of any material that significantly impedes or prevents natural infiltration of water into soil—includes (but not limited to) roofs, buildings, streets, parking areas, and any concrete, asphalt, or compacted gravel surface

impoundment an artificial collection or storage of water, as a reservoir, pit, dugout, sump, etc.

land use any activities that takes place on land, such as construction, farming, or tree removal

land conversion final harvest of the forest with subsequent land-use conversion to agriculture, residential or commercial development, mining or highway construction

load or loading the introduction of an amount of matter or thermal energy into a receiving water; may be either man-caused (pollutant loading) or natural (background loading)

monitoring the physical, chemical and biological analysis of water quality parameters as well as predictive measures of assessing nonpoint source water quality impacts

municipal stormwater permit NPDES permit issued to municipalities to regulate discharges from municipal separate storm sewers for compliance with EPA regulations and specify stormwater control strategies

nonpoint source (NPS) pollution diffused pollutants that are washed off the land (runoff) during the natural process of rainwater flowing across the land to rivers, lakes, oceans and other water bodies

nonpoint source assessment an evaluation of the state's waters on a watershed basis, consisting of the calculation of ordinal values for a number of NPS pollution related water quality impacting criteria, and resulting in (1) the nominal scaling of these criteria measures into three ranks, and (2) the creation of an overall NPS pollution water quality assignment similarly ranked

NPDES-National Pollutant Discharge Elimination System a national program in which pollution dischargers, such as factories and sewage treatment plants, are given permits to discharge. These permits contain limits on the pollutants they are allowed to discharge

outfall place where effluent is discharged into receiving waters

phosphorus an element found in fertilizers and sediment runoff which can contribute to the eutrophication of water bodies; it is the keystone pollutant in determining pollutant removal efficiencies for various BMPs as defined by the Virginia Stormwater Regulations

point source (PS) pollution discharges of treated or untreated effluent from industries, wastewater treatment plants and other sources that can be traced back to a single point of discharge. Some sources (leaching landfills, hazardous wastes, brownfields, materials storage, airport deicing, underground storage tanks, etc.) are subject to question, as to whether they fall into the point or nonpoint source category. In these situations, where NPDES permitting applies, the State of Virginia considers the issue a point source pollution problem, and the topic is not addressed in this nonpoint source pollution management plan.

riparian restoration tree planting to restore forest buffers and associated habitat in areas immediately adjacent to streams, rivers and wetlands, to reduce pollution entering streams from these adjacent land uses

runoff the portion of precipitation, snow melt or irrigation water that runs off the land into surface waters *runoff pollution-see nonpoint source pollution*

sediment material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by water or wind; sediment piles up in reservoirs, rivers and harbors, destroying wildlife habitat and clouding water so that sunlight cannot reach aquatic plants

sewage water-carried and nonwater-carried human excrement, kitchen, laundry, shower, bath or lavatory wastes separately or together with such underground, surface, storm and other water and liquid industrial wastes as may be present from residences, buildings, vehicles, industrial establishments or other places.

sewage disposal system a sewerage system or treatment works designed not to result in a point source

discharge

sewer any sanitary or combined sewer used to convey sewage or municipal or industrial wastes

sewerage system pipe lines or conduits, pumping stations and force mains and all other construction, devices and appliances appurtenant thereto, used for the collection and conveyance of sewage to a treatment works or point of ultimate disposal

silviculture forestry (development and care of forests) and the commercial farming of trees

site the parcel of land being developed, or a designated planning area in which a land development project is located

storm sewer a system of pipes, separate from sanitary sewers, that only carries runoff from buildings and land surfaces

stormwater basin a facility designed to impound stormwater runoff

stormwater management facility a device that controls stormwater runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, the period of release or the velocity of flow

stream buffers (riparian buffers) the zones of variable width which are located along both side of a stream and are designed to provide a protective natural area along a stream corridor

state waters all waters on the surface or under the ground, wholly or partially within or bordering the Commonwealth of Virginia or within its jurisdictions

total maximum daily load (TMDL) the maximum amount of a pollutant that a water body can receive daily without violating water quality standards; includes best estimates of pollution from nonpoint sources, natural background sources, point sources, and a margin of safety; can also be defined as the strategy which is implemented to reduce or eliminate the impact of pollution

total suspended solids (TSS) total amount of particulate matter which is suspended in the water column

treatment works any device or system used in the storage, treatment, disposal or reclamation of sewage and industrial wastes, including but not limited to pumping, power and other equipment and appurtenances, septic tanks and any works, including land, that are or will be an integral part of the treatment process or used for ultimate disposal of residues or effluent resulting from such treatment

tributary a body of water that drains into another, usually larger, body of water

urban runoff stormwater from city streets and adjacent domestic or commercial properties that carries nonpoint source pollutants of various kinds into the sewer systems and receiving waters

Water Quality Improvement Act of 1997 a state watershed initiative which “establishes cooperative programs related to nutrient reduction and other point and nonpoint sources of pollution” to restore and improve the quality of state waters and to protect them from impairment and destruction for the benefit of current and future citizens

Water Quality Improvement Fund state funds allocated for the Agriculture Cost-Share Program and nonpoint source pollution prevention, reduction and control projects through an annual grants awards process

water quality standards state-adopted and EPA approved ambient standards for water bodies; the standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses

watershed a drainage area or basin in which all land and water areas drain or flow toward a central collector such as a stream, river, or lake at a lower elevation

water table the uppermost surface of ground water saturation—the level in the saturated zone at which the pressure is equal to atmospheric pressure

Appendices

Appendix 1 - Current TMDL Implementation Planning thru 2015

Table-1. Completed TMDL Implementation Plans, January 2001 - April 2014.

#	Watershed (# of impairments / # of impaired segments)	Location (county or city)	Impairment	Completion date	EPA Approval Date
1	Middle Fork Holston (3/3)	Washington	Bc	2001	2003
2	North River (Muddy, Lower Dry, Pleasant, and Mill Creek) (5/4)	Rockingham	Bc, Be	2001	2003
3	Upper Blackwater River (4/4)	Franklin	Bc	2001	2003
4	Catoctin Creek (4/4)	Loudoun	Bc	2004	1/10/2005
5	Holmans Creek (2/2)	Shenandoah	Bc, Be	2004	1/3/2005
6	Four Mile Run (1/1)	Arlington, Alexandria	Bc	2004	NS
7	Willis River (1/1)	Cumberland, Buckingham	Bc	2005	7/28/2005
8	Chowan Study Area (9/9)	Multiple Counties	Bc	2005	NS
9	Moore's Creek (1/1)	Charlottesville, Albemarle	Bc	2005	8/10/2012
10	Guest River (5/5)	Wise, Scott, Dickenson	Be	2005	Being Updated
11	Lower Blackwater, Maggoddee and Gills Creek (3/3)	Franklin	Bc	2005	1/26/2006
12	Lynnhaven (shellfish) (2/2)	VA Beach	Bc	2005	NS
13	Cooks Creek and Blacks Run (6/2)	Rockingham, Harrisonburg	Bc, Be	2006	3/25/2006
14	Thumb, Deep, Carter and Great Runs (4/4)	Fauquier, Stafford	Bc	2006	5/22/2006
15	Big Otter (8/8)	Bedford, Campbell	Bc	2006	5/31/2006
16	Mill and Dodd Creeks (2/2)	Floyd, Montgomery	Bc	2006	12/18/2006
17	Little and Beaver Creek (3/2)	Bristol, Washington	Bc, Be	2006	6/3/2007
18	Stroubles Creek (1/1)	Montgomery	Be	2006	2/26/2014
19	Back Creek (2/1)	Pulaski	Bc, Be	2007	NS
20	Abrams and Opequon Creek (8/5)	Frederick, Winchester	Bc, Be	2006	2006
21	Knox and PawPaw Creek (4/2)	Buchanan	Bc, Be	2007	2/7/2013
22	Hawksbill and Mill Creek (2/2)	Page	Bc	2007	2008
23	Looney Creek (1/1)	Botetourt	Bc	2007	6/25/2008
24	Upper Clinch River (1/1)	Tazewell	Be	2008	1/3/2008
25	Occahannock Creek (shellfish) (1/1)	Accomac	Bc	2008	NS
26	Falling River (1/1)	Campbell, Appomattox	Bc	2008	6/18/2008
27	Dumps Creek (2/1)	Russell	TSS, TDS	2008	NS
28	Bluestone River (1/2)	Tazewell, Bluefield	Bc, Be (sed)	2008	7/26/2011
29	Smith Creek (1/2)	Rockingham, Shenandoah	Bc, Be (sed)	2008	12/1/2009
30	Appomattox River – Spring Creek, Briery Creek, Bush River, Little Sandy River and Saylers Creek (5/5)	Prince Edward, Amelia	Bc	2008	2008
31	Appomattox River – Flat, Nibbs, Deep and West Creeks (4/4)	Amelia, Nottoway	Bc	2008	2010
32	Straight Creek, Stone Creek and Tributaries (3/3)	Lee	Bc, Be (sed)	2009	NS
33	Long Glade Run, Mossy Creek and Naked Creek	Augusta,	Bc, Be (sed)	2009	2009

	(5/3)	Rockingham			
34	Back Bay Watershed (1/1)	City of Virginia Beach	Bc	2009	NS
35	North Landing Watershed (4/4)	City of Virginia Beach	Bc	2009	NS
36	Pigg River and Old Womans Creek (8/8)	Franklin, Pittsylvania	Bc	2009	2009
37	Cub, Turnip, Buffalo and UT Buffalo Creeks (4/4)	Appomattox, Charlotte	Bc	2009	2011
38	Hazel River Watershed (4/4)	Culpeper, Madison, Rappahannock	Bc	2009	8/2/2011
39	Greenvale Creek, Paynes Creek and Beach Creek (shellfish)(3/2)	Lancaster	Bc	2010	7/21/2011
40	Ash Camp and Twitty's Creek (2/2)	Charlotte	Be (sed)	2010	2010
41	Upper & Lower Middle River, Moffett Creek & Polecat Draft (7/5)	Augusta	Bc, Be (sed)	2010	2010
42	Mill and Powhatan Creek (2/2)	James City County	Bc	2010	NS
43	Lewis Creek (1/1)	Russell	Be (sed)	2010	6/14/2011
44	Browns, Craig and Marsh Runs (3/3)	Fauquier	Bc	2010	5/24/2011
45	Little Dark Run and Robinson River (3/3)	Culpeper & Madison	Bc	2010	5/31/2011
46	Rock Island, Austin, Frisby, Troublesome Creeks, North and Slate Rivers (6/6)	Buckingham	Bc	2010	6/23/2011
47	Hays, Moffatts, Otts and Walker Creeks (4/4)	Augusta & Rockbridge	Bc	2010	12/27/2012
48	Christians Creek and South River (6/3)	Augusta & Waynesboro	Bc, Be (sed)	2010	2010
49	South James River, Ivy, Tomahawk, Burton, Judith, Fishing, Blackwater and Beaver Creeks (8/8)	Campbell, Bedford, Amherst, Lynchburg	Bc	2010	NS
50	Nansemond River, Shingle Creek (3/3)	Suffolk	Bc	2010	NS
51	Cherrystone Inlet, Kings Creek (shellfish) (1/1)	Northampton	Bc	2011	NS
52	Roanoke River Watersheds – Upper Banister River and Stinking River, Bearskin, Cherrystone and Whitethorn Creeks (5/5)	Pittsylvania	Bc	2011	2013
53	York Basin Watersheds – Beaver Creek, Goldmine Creek, Mountain Run, Pamunkey Creek, Plentiful Creek, Terry's Run (6/6)	Louisa, Orange, Spotsylvania	Bc	2011	1/9/2013
54	James River Watersheds- James River and Bernsrd, Powhite Reedy, Gilles, Almond, Goode, Falling and Nonsme Creeks (10/10)	Chesterfield, Powhatan, Henrico, Richmond	Bc	2011	1/2/2014
55	Little River Watershed – Little River, Meadow Run, Pine, West Fork Dodd, Dodd, Meadow, Brush, Laurel, Big Indian Creeks (26/26)	Montgomery & Floyd	Bc, Be (sed), Temp	2012	NS
56	Clinch River; Coal, Middle, and Plum Creeks (7/7)	Tazewell	Bc, Be (sed)	2012	NS
57	Hoffler Creek (1/1)	Suffolk & Portsmouth	Bc	2012	NS
58	Mill Creek (1/1)	Northampton	Be (DO, pH)	2012	NS
59	Lower Banister River, Polecat Creek and Sandy Creek (3/3)	Halifax, Pittsylvania	BC	2013	9/19/2013
60	Middle Fork Holston River & Wolf Creek (8/6)	Abingdon, Smyth, Washington, Wythe	Bc, Be (sed)	2013	2/26/2014
61	Spout Run (4/3)	Clarke	Bc, Be (sed)	2013	8/8/2013
62	Piankatank River, Milford Haven, Gwynns Island (17/16)	Mathews, Middlesex, Gloucester	Bc	2013	NS
63	Mill Creek, Cove Creek, Miller Creek, Stony Fork, Tate Run, S.F. Reed Creek, Reed Creek (9/9)	Wythe	Bc	2013	NS

64	Beaverdam, Boatswain Creek, Chickahominy River, Collins Run, Stony Run (5/5)	Hanover, Henrico, Charles City, Richmond	Bc	2013	NS
65	Rockfish River (4/4)	Nelson	Bc, Be (sed)	2013	7/16/2013
66	South Fork Mayo River, North Fork Mayo River, Blackberry Creek, Smith Creek, Marrowbone Creek, Leatherwood Creek (8/8)	Henry, Patrick, and City of Martinsville	Bc	2013	1/15/2014
67	Darden Mill Run, Mill Swamp, Three Creek (9)		Bc	2013	NS
68	North Fork Holston River (35/35)	Scott, Washington, Smyth, Russell, Bland, Tazewell	BC, Temp	2013	NS
69	Turley Creek, Long Meadow (2/2)	Rockingham	Be (sed)	NA	
70	Moore's Creek, Lodge Creek, Meadows Creek and Schenks Branch (4/4)	Albemarle and Charlottesville	Be (sed)	NA	
71	Linville Creek (2/1)	Rockingham	Bc, Be (sed)		4/14/2014
72	Wards Creek, Upper Chippokes Creek, Western Run, Crewes Channel, West Run, James River (6/6)			UD	NS
73	Elk and Cripple Creek (2)		Bc	UD	NS
74	Roanoke River Watersheds – South Fork, Smith Creek, Bradshaw, North Fork, Wilson Creek, Mud Lick Creek, Mason Creek, Murray Run, Ore Branch, Perters Creek, Roanoke River, Carvin Creek, Glade Creek, Laymantown Creek, Tinker Creek, Back Creek (55)	Botetourt, Montgomery, Roanoke, Roanoke City, Salem, Town of Vinton	Bc, Be (sed)	UD	NS

Impairment types: Bc = bacteria, Bn = Benthic, TSS = Total suspended solids, TDS = Total dissolved solids, Sed = sediment, NS - Not Submitted, NA=not approved, UD = Under Development

Appendix 2 – Current TMDL Implementation Priorities thru 2015 (and further if known)

Watershed Area	TMDL Segment	Years of Implementation	Funds Used
Willis River	VAC-H36R	2005-2015	\$319(h), VNRCF
Thumb and Carter Runs	VAN-E01R, E02R & E10R	2006-2015	\$319(h), VNRCF
Upper Hazel River	VAN-E03R, E04R, E05R	2009-2015	\$319, VNRCF, WQIF RFP
Slate River and Rock Island Creek	VAC-H1/R, H21R, H22R	2010-2016	\$319, VNRCF
Craig Run, Browns Run and Marsh Run	VAN-E08R	2012-2016, agricultural funding since 2011	\$319(h), VNRCF, VNCR-CBLEI
Smith Creek	VAV-1347R	2012-2015, 2008+ for NRCS	\$319(h), NRCS
Guest River	VAS-P11R	2012-2015 (sporadically since 2005)	\$319, VNRCF, WQIF RFP
Lewis Creek	VAS-P04R	2012-2015	\$319(h), VNRCF
Upper York River	VAN-F06R, F07R	2012-2016	\$319(h), VNRCF
Hays, Moffats, Otts, and Walker Creeks	VAN-I34R	2012-2016	\$319(h), VNRCF
Spout Run	VAV-B57R	2014-2016	\$319(h)
Lower Bannister River, Polecat Creek, Sandy River	VAW-L45R, L46R	2012-2016 (Agriculture started in 2012, 319H funding started in 2013)	\$319(h), VNRCF

South Mayo River, South Fork Mayo River, North Mayo River	VAC-L67R, L70R, L71R	2012-2016 (VNRCF Agriculture started in 2012)	\$319(h),VNRCF
Greenvale, Paynes, and Beach Creeks	VAN-E25,E-28	2014-2016	\$319(h)
North Fork, South Fork and Rockfish River	VAV-H15R, H16R	2013-2015	\$319(h)
Upper Middle Fork Holston River	VAS-O03R	2014-2016	\$319(h)
Stroubles Creek	VAW-N22R	2014-2016	\$319(h)
Falling River	VAW-L34R	2007 – 2015	WQIF, VNRCF
Mossy and Naked Creeks, Long Glade Run	VAV-B19R, B24R, B28R	2007 – 2015	WQIF, VNRCF
Pigg River (Blue Ridge SWCD)	VAW-L14R, L15R, L16R, L17R	2007 – 2015	WQIF, VNRCF, RFP
Pigg River (Pittsylvania SWCD)	VAW-L13R, L17R, L18R	2007 – 2015	WQIF, VNRCF, RFP
Twittys and Ash Camp Creeks	VAC-L39R	2007 – 2015	WQIF, VNRCF
Flat, Nibbs, Deep and West Creeks	VAP-J08R, L09R, J11R	2007 – 2015	WQIF, VNRCF
Moffett Creek, Middle River, Polecat Draft	VAV-B10, B13, B15	2007 – 2015	WQIF, VNRCF
Christians Creek and South River	VAV-B14, B30	2007 – 2015	WQIF, VNRCF
Briery, Little Sandy, Spring, Saylers Creeks and Bush River	VAC-J02, J03, J04, J05 AND J06R	2007 – 2015	WQIF, VNRCF

Appendix 3 – Status of Chesapeake Bay BMP Milestones thru 2013 and 2015 milestones and 2025 WIP

2/24/14		2009 Progress	2013 Progress	2015 draft Milestone	2025 WIP
		VA	VA	VA	VA
<i>Agriculture Practices</i>	Unit	2009N051811	2013Progressv10N022414	2015DraftMilestoneN032014	2010AIWIP251N052512
Forest Buffers	acres	3,154	6,028	6,114	79,814
Wetland Restoration	acres	214	420	420	19,215
Land Retirement	acres	81,605	92,427	94,536	122,824
Grass Buffers	acres	10,362	13,209	16,142	109,032
Tree Planting	acres	16,216	29,559	30,405	107,108
Carbon Sequestration	acres	0	0	0	0
Conservation Plans	acres	926,165	1,131,522	1,349,548	1,883,053
Water Control Structures	acres	0	182	159	700
Crop Irrigation Management	acres	0	0	26	0
Liquid & Poultry Injection	acres	0	0	0	0
Ditch Filters	acres	0	0	0	
Capture & Reuse	acres	0	0	0	3,753
NonUrban Stream Restoration	feet	19,332	320,141	316,868	104,528
Livestock Waste Management Systems	AU	94,500	122,632	158,742	600,052
Poultry Waste Management Systems	AU	130,818	152,057	145,178	262,006
Livestock+Poultry Waste Management Systems	AU	225,318	274,689	303,920	862,058
Livestock Mortality Composting	AU	0	3,251	6,489	5,415
Poultry Mortality Composting	AU	0	6,318	7,141	17,607
Livestock+Poultry Mortality Composting	AU	0	9,569	13,630	23,022
Barnyard Runoff Control	acres	525	1,072	1,156	5,488
Loafing Lot Management	acres	0	302	272	0
Barnyard Runoff Control & Loafing Lot Management	acres	525	1,374	1,428	5,488
Manure Transport Outside CBWS	tons	0	2,879	6,000	148,500
Manure Transport Within CBWS	tons	0	11,182	0	43,500
Manure Transport	tons	0	14,061	6,000	192,000
Poultry Phytase	% AU @ % TP reduction	100% @ 16%	100% @ 16%	100% @ 16%	100% @ 25%
Swine Phytase	% AU @ % TP reduction	0	0	100% @ 35%	100% @ 35%
Dairy Precision Feeding TN	% AU @ % TN reduction	0	0	0	100% @ 24%
Dairy Precision Feeding TP	% AU @ % TP reduction	0	0	0	100% @ 25%
Ammonia Emission Reductions (Alum)	% AU @ % TN reduction	0	4% @ 50%	0	46% @ 50%
Ammonia Emission Reductions (Biofilters & Lagoon Covers)	% AU @ % TN reduction	0	0	0	0

2/24/14		2009 Progress	2013 Progress	2015 draft Milestone	2025 WIP
		VA	VA	VA	VA
<i>Agriculture Practices</i>	Unit	2009N051811	2013Progressv10N022414	2015DHMSN032014	2010AIIWIP251N052512
Nutrient Application Management on Crop	acres	515,275	545,873	0	530,947
Decision Agriculture	acres	0	11,139	50,000	157,869
Enhanced Nutrient Application Management	acres	0	0	750,000	67,715
Traditional+Enhanced Nutrient Application Management	acres	515,275	557,012	800,000	756,531
Nutrient Application Management on Pasture	acres	59,986	70,855	0	406,550
Enhanced Nutrient Application Management on Pasture	acres	0	0	100,000	0
Conservation-Till Specialty Crops	acres	0	0	0	25,012
Continuous NoTill	acres	33,995	0	0	304,400
High Residue Tillage	acres	0	95,471	119551.99	0
Other Conservation-Till	acres	375,976	288,053	298,953	210,678
Conservation Tillage w/ Continuous NoTill	acres	409,971	383,524	418,505	515,078
Cover Crop	acres	53,946	107,722	129,364	232,649
Commodity Cover Crop	acres	25,869	31,931	46,944	76,210
Commodity+Cover Crop	acres	79,815	139,653	176,308	308,859
Pasture Alternative Watering	acres	20,531	72,402	75,000	13,917
Prescribed Grazing	acres	239,065	298,007	344,211	534,265
Precision Intensive Rotational Grazing	acres	0	0	0	0
Horse Pasture Management	acres	0	35	35	23,570
Stream Access Control with Fencing	acres	33,866	52,390	58,460	56,029
Pasture Management Composite	acres	293,462	422,834	477,706	627,781
Forest Buffers on Fenced Pasture Corridor	acres	13,678	13,679	13,697	19,623
Grass Buffers on Fenced Pasture Corridor	acres	19,918	13,959	2,817	31,927

		2009 Progress	2013 Progress	2015 draft Milestone	2025 WIP
		VA	VA	VA	VA
Urban/Suburban Practices	Unit	2009N051811	2013Progressv10N022414	2015DraftMSN032014	2010AllWIP251N052512
Wet Ponds & Wetlands	acres	156,707	177,648	179,237	177,773
Dry Ponds	acres	136,123	153,427	153,386	85,554
Extended Dry Ponds	acres	64,820	74,249	73,863	160,881
Infiltration Practices	acres	1,588	1,925	1,945	69,127
Filtering Practices	acres	4,927	6,188	6,196	65,868
BioRetention	acres	0	388	624	22,352
BioSwale	acres	0	3	2	1,144
Permeable Pavement	acres	0	2	5	52
Vegetated Open Channel	acres	0	5	15	3,283
SWM by Era (1985-2002)	acres	0	0	0	0
SWM by Era (2002-2010)	acres	0	0	0	0
Retrofit Stormwater Management	acres	0	0	0	0
Stormwater Management Composite	acres	364,165	413,834	415,273	586,033
Erosion and Sediment Control	acres	26,975	13,203	17,524	29,948
Extractive Erosion and Sediment Control	acres	0	0	24,000	2,974
Forest Conservation Act	acres	0	1,006	0	14,128
Impervious Surface & Urban Growth Reduction	acres	3	115	131	24,779
Urban Forest Buffers	acres	0	76	78	4,115
Urban Tree Planting	acres	0	0	2	799
Urban Nutrient Management	acres	20,934	28,856	60,000	517,058
Urban Phosphorus Legislation	% acres @ % TP reduction		100% @ 70%	1,353,556	
Urban Stream Restoration (feet)	feet	0	187,378	187,378	116,399
Street Sweeping (lbs)	lbs	0	218,677	250,000	0
Street Sweeping	acres	632	0	0	24,040
Abandoned Mine Reclamation	acres	970	797	1,797	29,247
Septic Connections	systems	2	7	607	42,224
Septic Denitrification	systems	0	400	600	81,433
Septic Pumping	systems	14,083	25,100	35,908	68,432
Resource Practices					
Forest Harvesting BMPs	acres	187,293	70,075	82,430	87,305
Dirt&Gravel Road E&S (feet)	feet	0	1,738	0	4,807

June